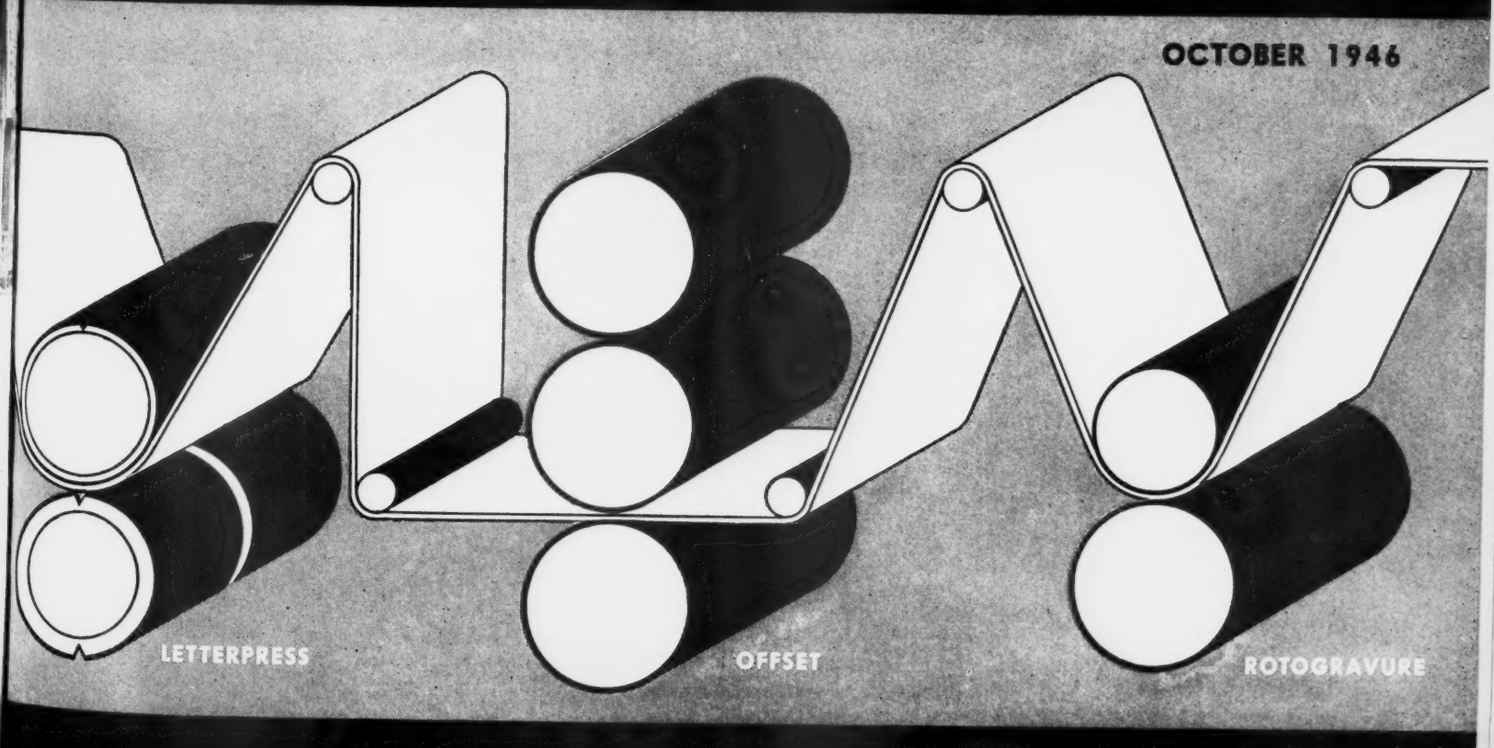
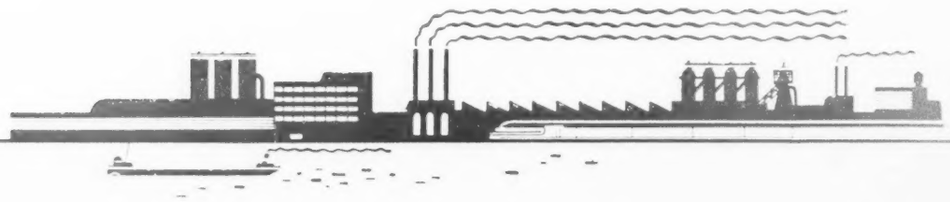
Engineer

OCTOBER 1946



HOW OFFSET LITHOGRAPHY SERVES INDUSTRY



Annual reports...

Today, there are new faces in the picture. Customers and employees, as well as stockholders and financial institutions, are taken behind the scenes of the company's operations by way of the annual report. Hardheaded businessmen have learned that the company's annual report is a potent force for building good will.

That is why today's annual reports fairly sparkle with colorfully ingenious charts and pictographs and with views of the plant, its people and its operations.

You would look a long time before you could find a more natural spot for lithography.

The wide selection of grades and finishes of paper, the economies of platemaking, the sharpness of line and the smoothness of color, the faithfulness of reproduction and the greater speed of offset presses are all good, sound reasons for producing annual reports by offset.

This kind of business is made-to-order for the Harris 17 x 22. This small offset press features four form rollers, trouble-free adjustments and speeds up to 7,000 impressions per hour with an extreme minimum of maintenance.

As auxiliary units in large lithographic shops, or for moderate size runs in combination offset and letterpress shops, Harris 17 x 22's are real money-makers.

FOR EMPLOYEES

FOR CUSTOMERS

FOR STOCKHOLDERS

The Harris-Seybold 1946 Annual Report is a typical example of what we mean when we say that annual report business is a "natural" for lithography. A copy will be sent to lithographers and printers interested in increasing their volume through the production of annual reports. Please address requests on your letterhead to Harris-Seybold Company, General Sales Offices, Cleveland 5, Ohio.

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YEAR AFTER YEAR – IT'S STILL PREMIER

It has been more than ten years since the first Premier Rotary Shavers went into daily operation in America's newspaper and commercial electrotype plants. They are still working around the clock, turning out a precision product of which their owners may well be proud. More than one-hundred Premiers are now in actual service or on order!

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69% of orders now being received for Miller Automatics are from well-known Miller users.

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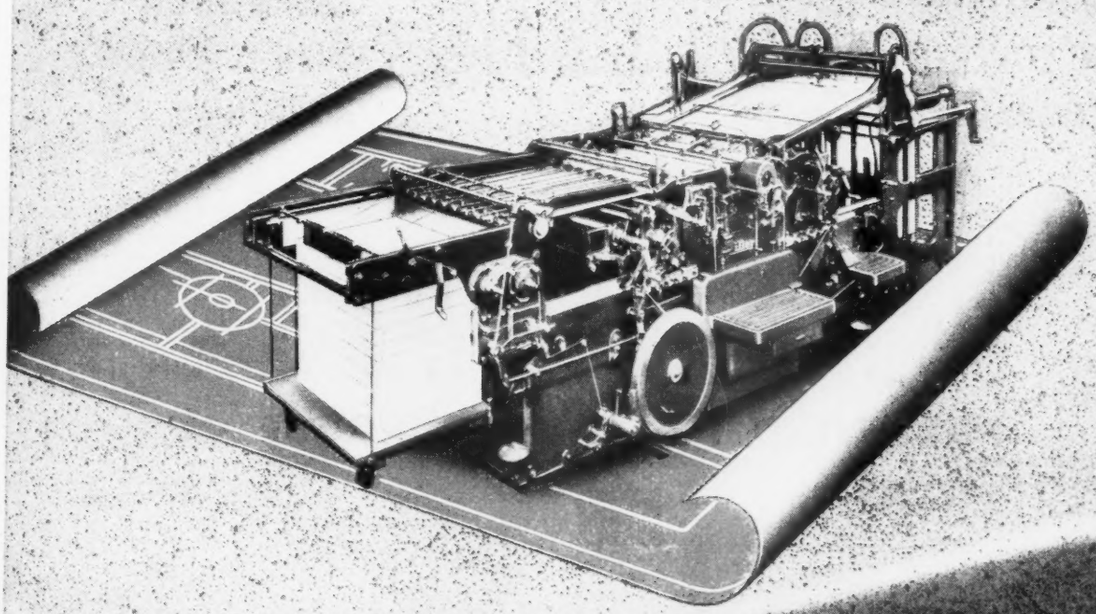

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PRINTING EQUIPMENT *Engineer*

Volume 73 **Number 1**

A technical publication for the mechanical executive responsible for printing production, equipment and supplies in the commercial, magazine, private plant and daily newspaper field.

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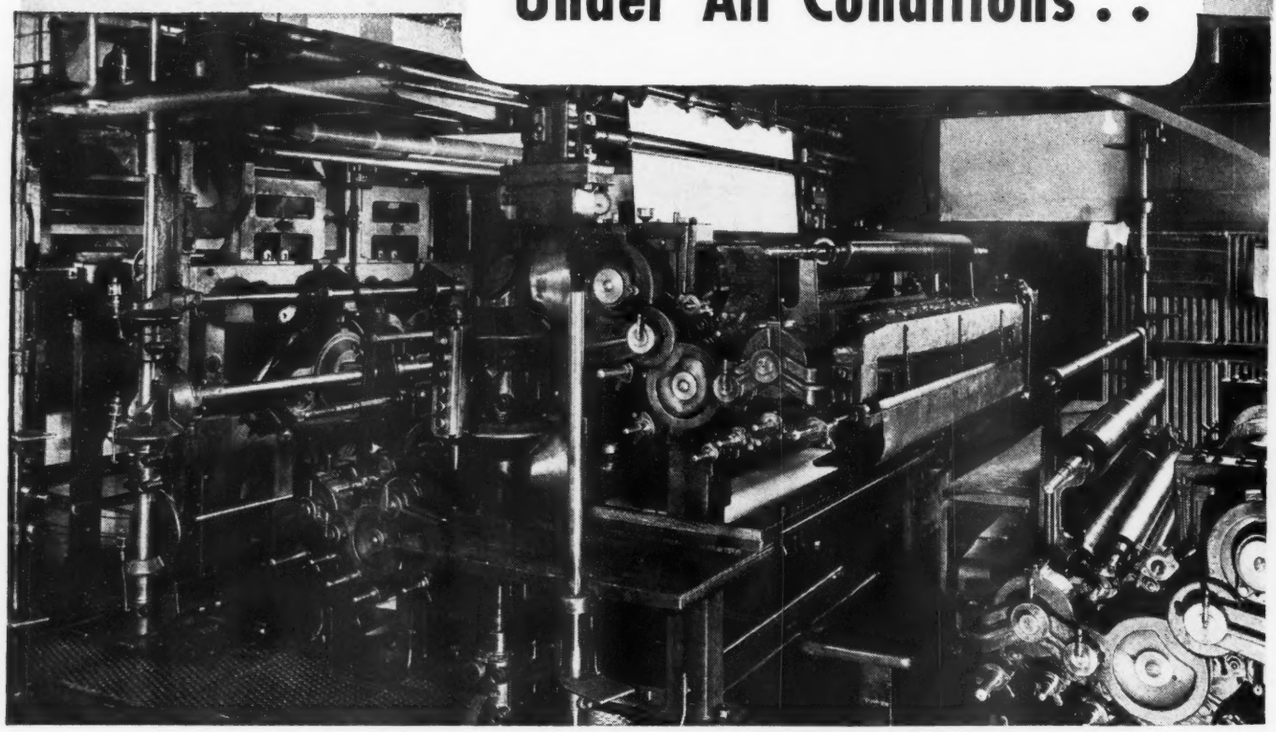

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learn how—through the new KEMP Bulletin IE-10

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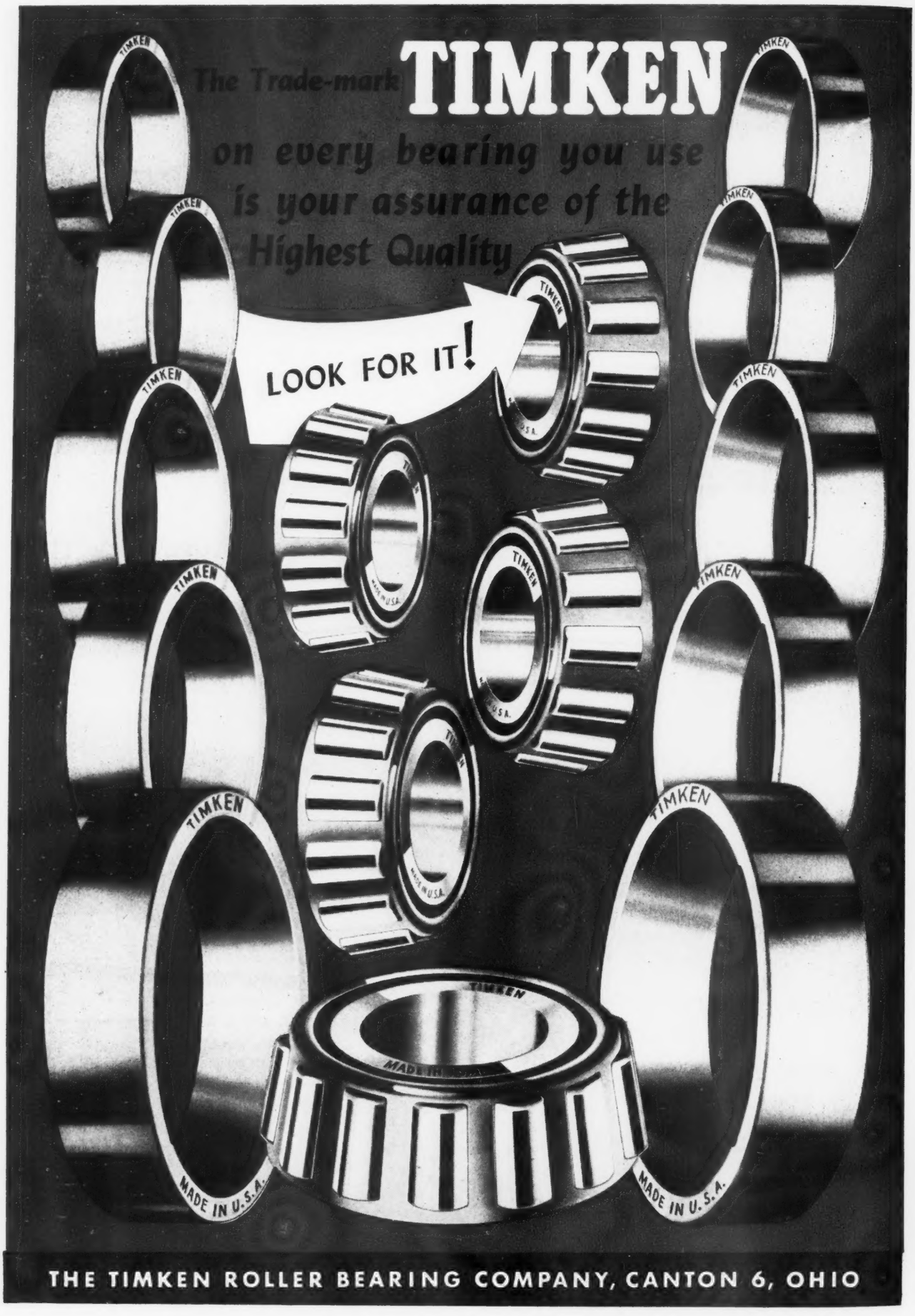
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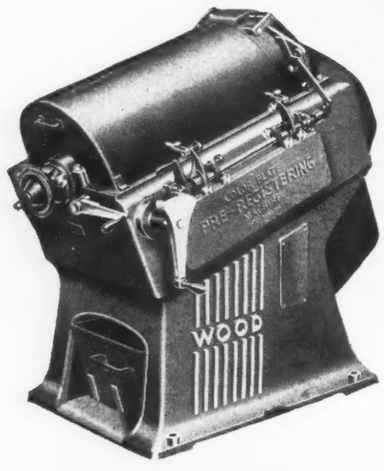

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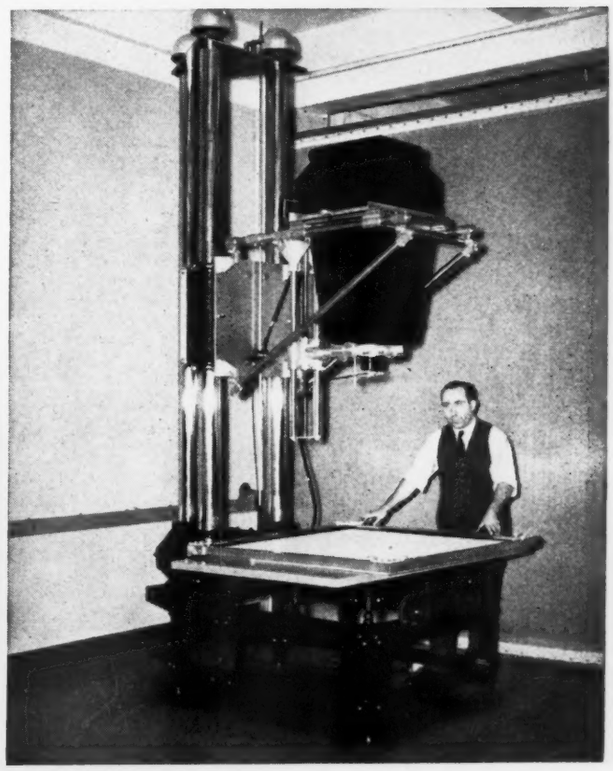

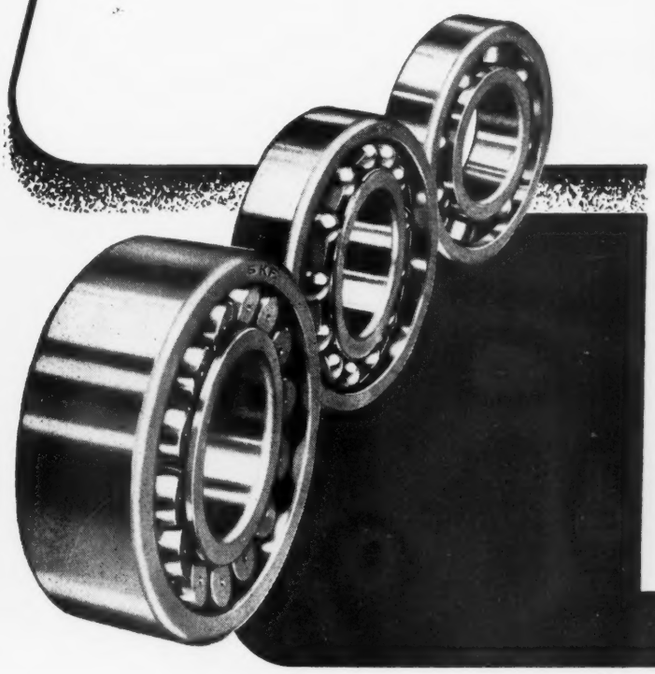

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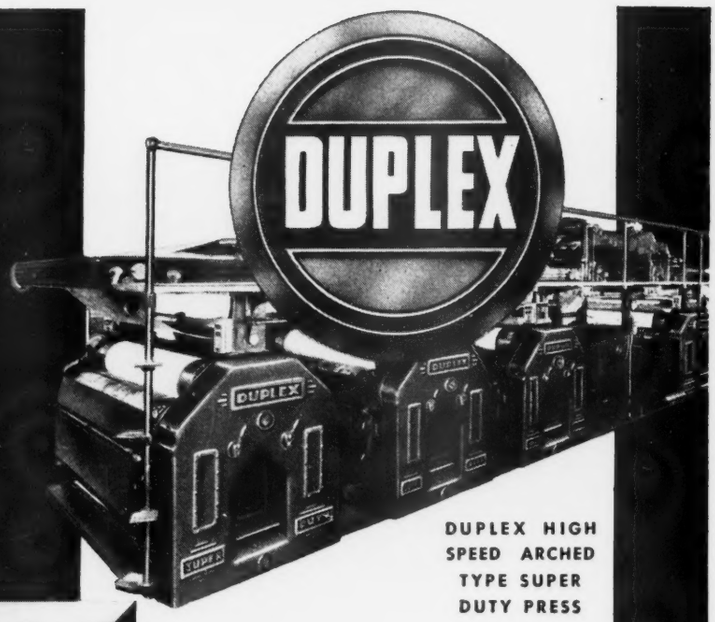

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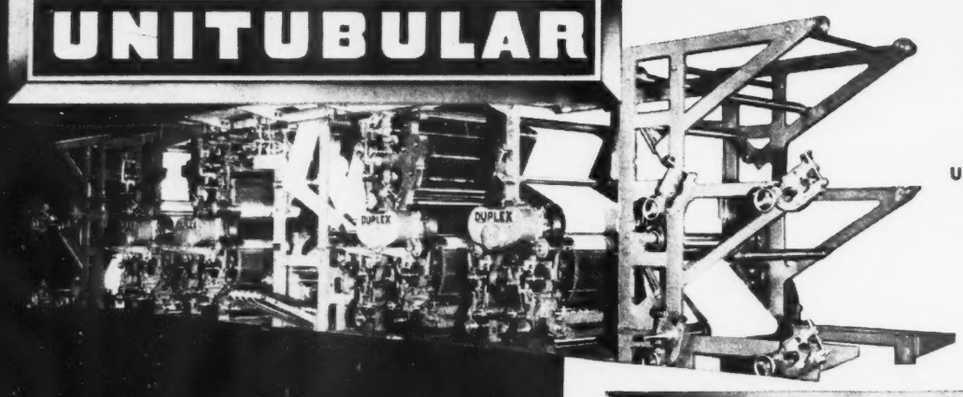

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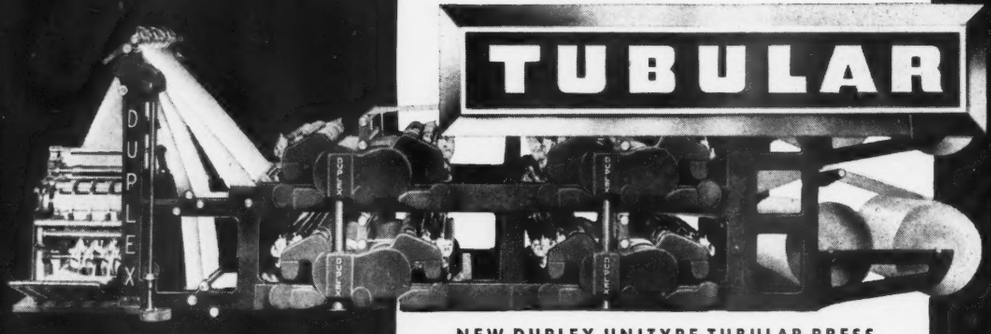
TUBULAR



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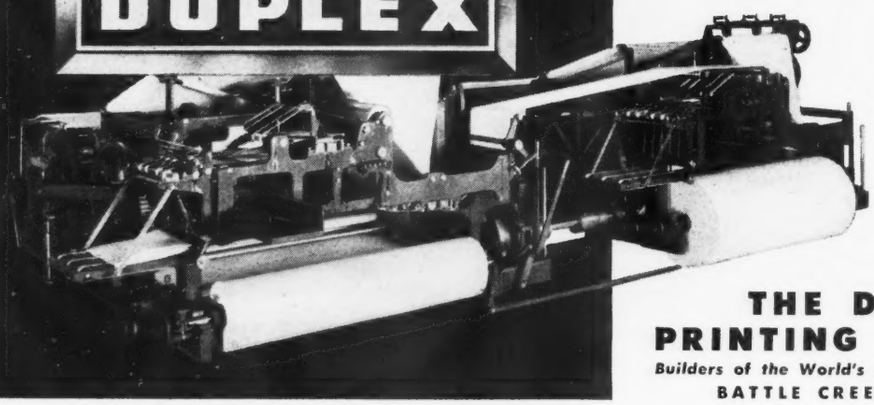

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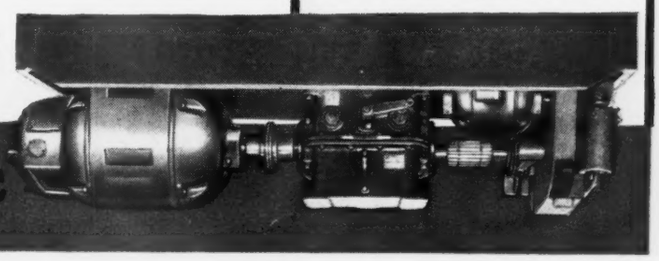

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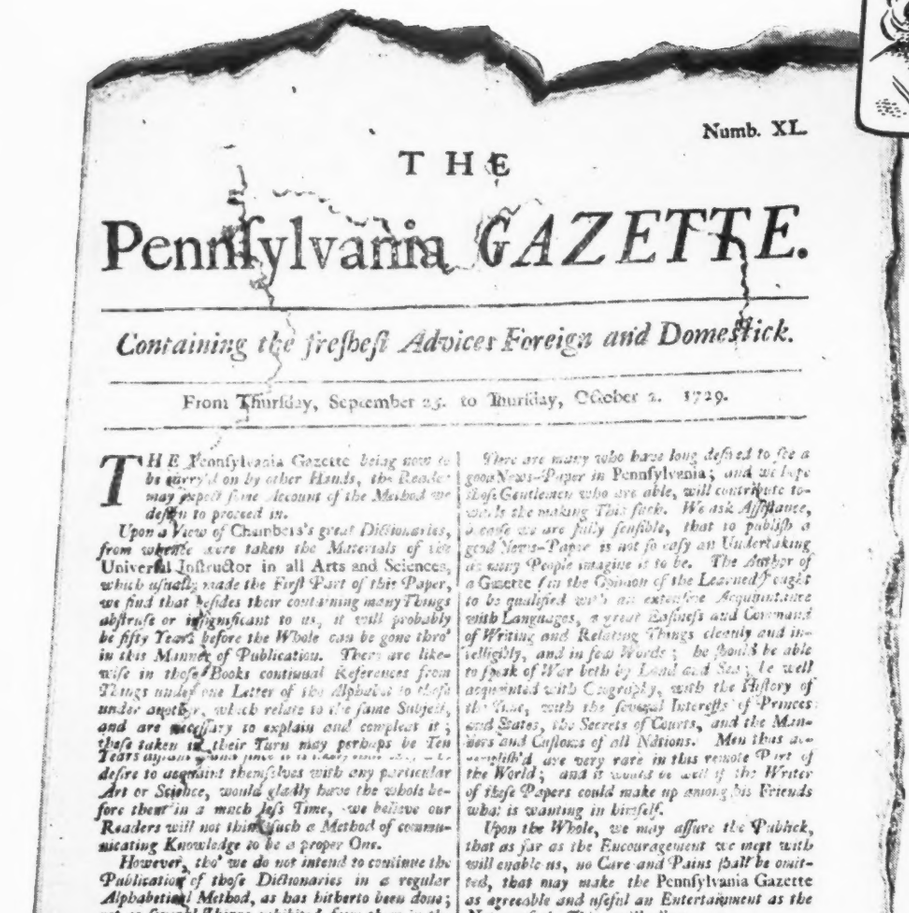

Numb. XL.

THE

Pennſylvania GAZETTE.

Containing the freſheſt Advices Foreign and Domeſtick.

From Thurſday, September 25. to Thurſday, October 2. 1729.

THE Pennſylvania Gazette being now to be carry'd on by other Hands, the Reader may expect ſome Account of the Method we deſign to proceed in.

Upon a View of Chambers's great Dictionaries, from whence were taken the Materials of the Univerſal Inſtructor in all Arts and Sciences, which uſually made the Firſt Part of this Paper, we find that beſides their containing many Things abſtruſe or inſignificant to us, it will probably be fifty Years before the Whole can be gone thro' in this Manner of Publication. There are likewiſe in thoſe Books continual References from Things under one Letter of the Alphabet to thoſe under another, which relate to the ſame Subject, and are neceſſary to explain and compleat it; thoſe taken in their Turn may perhaps be Ten Years apart, which ſome of [illegible] deſire to acquaint themſelves with any particular Art or Science, would gladly have the whole before them in a much leſs Time, we believe our Readers will not think ſuch a Method of communicating Knowledge to be a proper One.

However, tho' we do not intend to continue the Publication of thoſe Dictionaries in a regular Alphabetical Method, as has hitherto been done; yet as ſeveral Things exhibited from them in the Courſe of theſe Papers, have been entertaining to ſuch of the Curious, who never had and cannot have the Advantage of good Libraries; and as there are many Things ſtill behind, which being in this Manner made generally known, may perhaps become of conſiderable Uſe, by giving ſuch Hints to the excellent natural Genius's of our Country, as may contribute either to the Improvement of our preſent Manufactures, or towards the Invention of new Ones; we propoſe from Time to Time to communicate ſuch particular Parts as appear to be of the moſt general Conſequence.

As to the Religious Courtſhip, Part of which has been retail'd to the Publick in theſe Papers, the Reader may be inform'd, that the whole Book will probably in a little Time be printed and bound up by it ſelf; and thoſe who approve of it, will doubtleſs be better pleas'd to have it intire, than in this broken interrupted Manner.

There are many who have long deſired to ſee a good News-Paper in Pennſylvania; and we hope thoſe Gentlemen who are able, will contribute towards the making This ſuch. We ask Aſſiſtance, a caſe we are fully ſenſible, that to publiſh a good News-Paper is not ſo eaſy an Undertaking as many People imagine it to be. The Author of a Gazette (in the Opinion of the Learned) ought to be qualified with an extenſive Acquaintance with Languages, a great Eaſineſs and Command of Writing and Relating Things cleanly and intelligibly, and in few Words; he ſhould be able to ſpeak of War both by Land and Sea; be well acquainted with Cosmography, with the Hiſtory of the Time, with the ſeveral Intereſts of Princes and States, the Secrets of Courts, and the Manners and Cuſtoms of all Nations. Men thus accompliſh'd are very rare in this remote Part of the World; and it would be well if the Writer of theſe Papers could make up among his Friends what is wanting in himſelf.

Upon the Whole, we may aſſure the Publick, that as far as the Encouragement we meet with will enable us, no Care and Pains ſhall be omitted, that may make the Pennſylvania Gazette as agreeable and uſeful an Entertainment as the Nature of the Thing will allow.

The Following is the laſt Meſſage ſent by his Excellency Governour *Burnet*, to the Houſe of Repreſentatives in *Boſton*.

Gentlemen of the Houſe of Repreſentatives,

IT is not with ſo vain a Hope as to convince you, that I take the Trouble to anſwer your Meſſages, but, if poſſible, to open the Eyes of the deluded People whom you repreſent, and whom you are at ſo much Pains to keep in Ignorance of the true State of their Affairs. I need not go further for an undeniable Proof of this Endeavour to blind them, than your ordering the Letter of Meſſieurs *Wilks* and *Belcher* of the 7th of *June* laſt to your Speaker to be publiſhed. This Letter is ſaid (in Page 1. of your Votes) *to include a Copy of the Report of the Lords of the Committee of His Majeſty's Privy Council, with His Majeſty's Approbation and Order thereon in Council*; Yet theſe Gentlemen had at the ſame time the unparallell'd Preſumption to write to the Speaker in this Manner: *You'll obſerve by the Concluſion, which is preſumed to be the Conſequence of your not complying with His Majeſty's Inſtruction (the whole Matter to be laid*

Illustration from The Bettmann Archive

BEN FRANKLIN

entered the struggle of early American journalism with the publication of his first issue of *The Pennsylvania Gazette*, October 2, 1729.

Typically, his page one editorial revealed the new publisher's inner feelings when he wrote, "There are many who have long desired to see a good News-Paper in Pennsylvania . . . we are fully sensible, that to publish a good News-Paper is not so easy an Undertaking as many People imagine it to be.

"Upon the Whole, we may assure the Publick, that as far as the Encouragement we meet with will enable us, no Care and Pains shall be omitted, that may make *The Pennsylvania Gazette* as agreeable and useful an Entertainment as the Nature of the Thing will allow."

Modern American newspaper publishers, confronted with many of the same difficulties, can avoid those production hazards which must have plagued Franklin in those days when he was raising circulation to 10,000 and establishing *The Gazette* as one of the most influential papers of the Colonial Period. The application of GAS, essential productive fuel, to publishing operations such as stereotype production, paper-curing, ink drying, and type-metal melting, will speed mechanical department functions.

The American Gas Association salutes the A.N.P.A. on the occasion of American Newspaper Week, October 1-8, 1946, and offers to newspaper publishers the full cooperation of its staff, and local Gas Company members, in improving pressroom operations.

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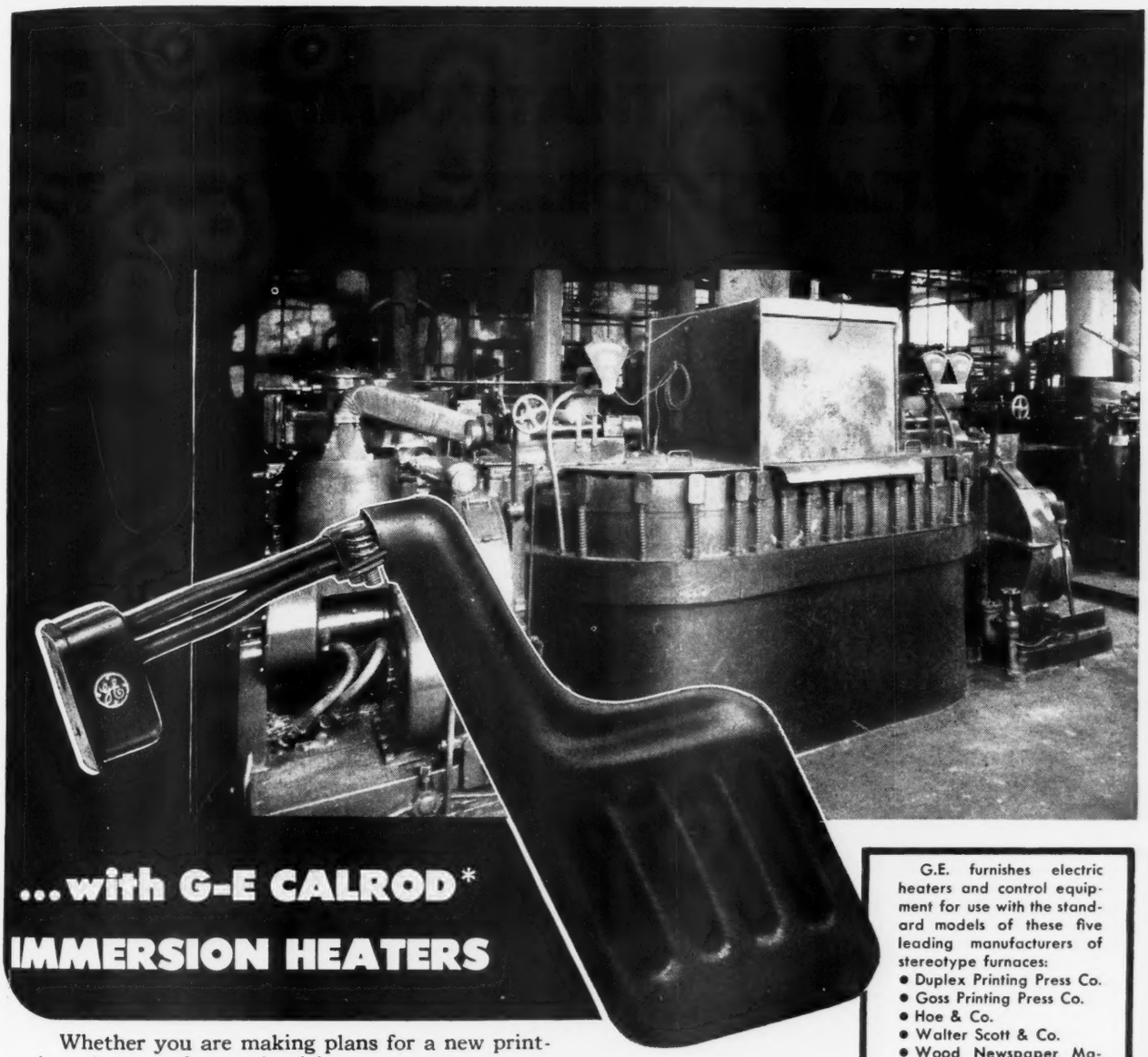

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- Hoe & Co.
- Walter Scott & Co.
- Wood Newspaper Machinery Corp.

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2. **Increased Production**
3. **Cleaner, Cooler Working Conditions**
4. **Accurate, Automatic Temperature Control**
5. **Less Dross**

Calrod immersion heaters, when equipped with automatic control equipment, provide all these benefits and many more. These heaters are immersed directly into the stereotype metal, and with their fast-heating characteristic, the metal is brought up quickly to its working temperature.

By means of automatic temperature controls, uniform heat distribution is assured, and dross is substantially reduced. Clear-cut plates result, thereby improving the general appearance of the printed matter.

The operation of this equipment is silent, and with the elimination of flues, working conditions are cleaner and cooler.

Approximately 300 newspapers and printing houses have already installed or converted to these reliable Calrod immersion heaters for faster, more efficient stereotype melting. And, in several of the busiest plants where conversion was required, electric installations were made in ***one weekend.***

For more detailed information on selecting and applying G-E immersion heaters, contact the heating specialist in a G-E Office near you. Or, write for free Bulletin GEA-4653. Address Apparatus Dept., General Electric Company, Schenectady 5, New York.

*Reg. U.S. Pat. Off.

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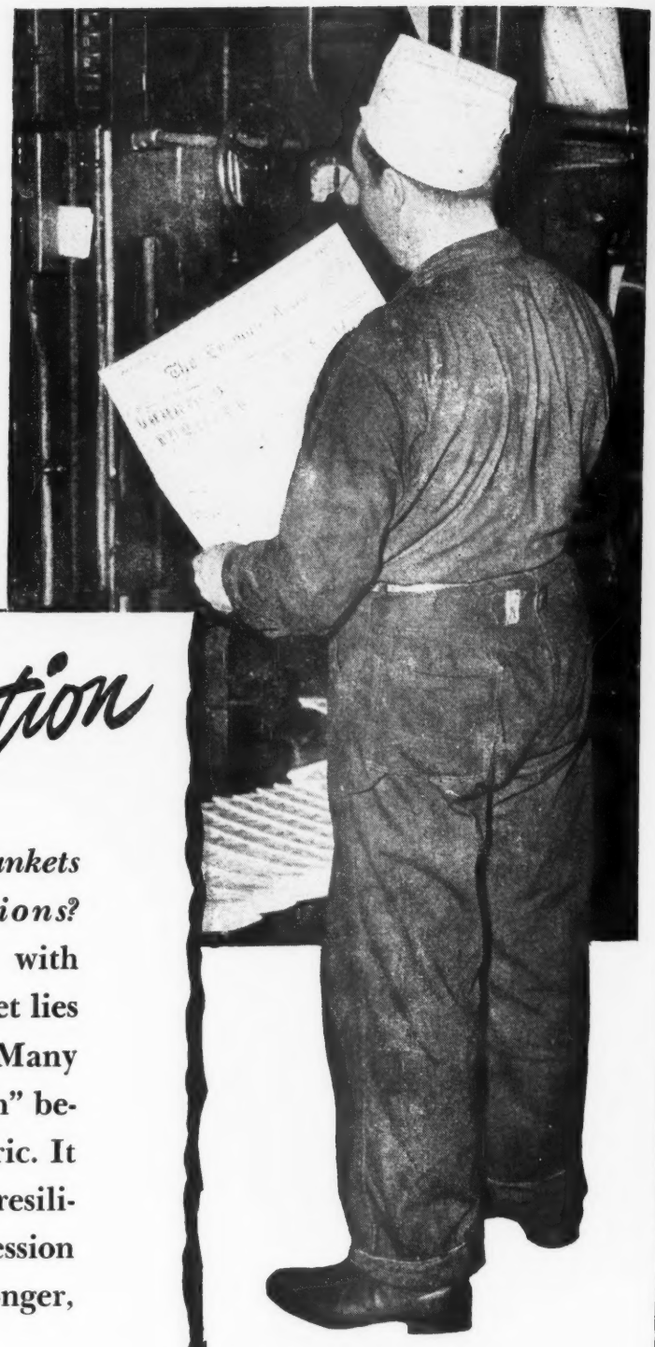

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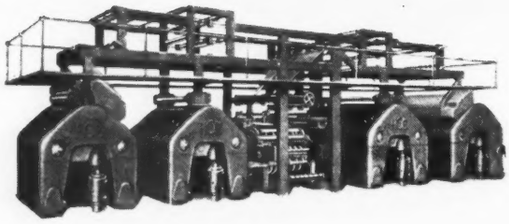

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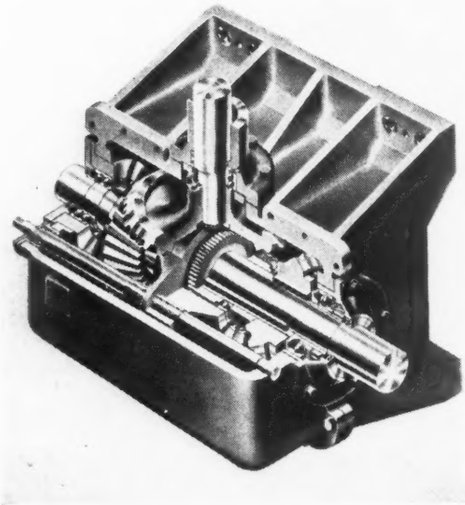
For example: . . . A reversing mechanism may easily be added to the cylinder gear assembly to reverse one printing couple of a unit to receive the web from an adjacent unit . . . A reversing mechanism may be placed in the main drive housing to reverse the operation of an entire unit . . . A color plate cylinder can be imposed on any desired existing impression cylinder, etc., — all advance provisions having been made to accommodate them.

Here is the cylinder gearing, including extra parts, for reversing the left-hand cylinder couple. These parts, which may either be placed in the unit initially or added later, consist of a yoke and collars to shift the gears to be reversed, and the small shaft and pinions to the left of the vertical drive shaft. As shown, the gears are in position for normal cylinder rotation.



To reverse the entire unit, additional gearing and a gear-shifting mechanism may be installed in the main drive housing. Then, either of the two drive bevels keyed to the main drive shaft can be shifted into engagement with the upright shaft bevel to get normal or reverse unit operation merely by turning the lead screw shown in the illustration. When the entire unit is thus reversed, the left hand couple is returned to normal rotation by its individual reversing mechanism.

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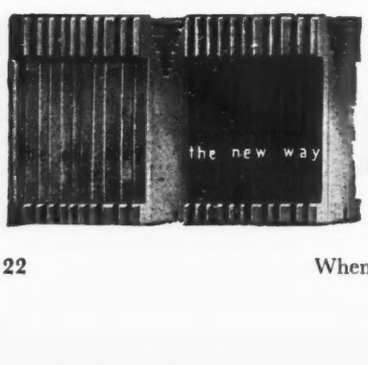

Matrix Contrast Service

Graphic Arts Research

A glimpse into Graphic Arts Division of Battelle Memorial Institute — Division created as a result of awakened need for printing research

By MacD. SINCLAIR

Printing's production and mechanical executives have the greatest respect in the world for scientific research as applied to the Graphic Arts Industries. They realize the need for technological refinements in their industry, but they do not have the necessary technical training, facilities, the time, and the financial resources to pursue scientific research. There is another slant to the executive's viewpoint. It is this: Most executives are keenly aware that many of their products and the methods used in producing them can be improved. Habitual post-mortem examinations by executives substantiate this observation.

The reason for this is that the printing executive's profession partakes of management, production and craftsmanship. Defects in all three qualities make him sensitive to the need for scientific research.

Scientific research does not seek, in every instance, to devise a new and revolutionary printing method. It also seeks to improve existing processes and methods—to get rid of the "bugs" which exist in printing processes. About half of the scientific research now being conducted is devoted to the striving for perfection in present processes.

As has been stated above, printing executives are aware of their own inability to conduct investigational work except in its crudest form. Such work as they do from time to time is apt to be approached through empirical methods. Call it "practical research" if you will. Occasionally some printing executive does come up with a worth-while development. These developments, however, are relatively scarce.

More than ever, printing executives are conscious of the fact that the future technological progress of their industry is dependent entirely upon scientific research—whether private or cooperative. Printing is the fifth industry in size, nationally speaking. For some reason, the industry has not seen fit to invest a part of its income in research, until recently. Perhaps scientific developments during the war have had something to do with it. We are pleased to state that there is an awakening with respect to research among various segments of the Graphic Arts Industries.

Incidentally, research costs money—lots of it. In the end, research may or may not find the answer. If the problem is solvable, however, scientific research should find the answer.

According to Dr. J. Robert Van Pelt, Supervisor of Research Education at Battelle, "Research pays for the costs of successes and failures. In addition, it will pay a dividend."

In such a highly mechanized business as the printing industry, we don't feel anyone can possibly take exception to the statement that, if the industry expects to progress technologically in the future, the facilities of scientific research must be enlisted.

In the case of research financed by the manufacturers of materials and equipment, the consumer pays indirectly for this cost in the price of the items he buys. In a cooperative consumer research, the cost is divided pro rata among the firms participating in the research program. Paradoxically, though in some cases the ultimate purchaser of the printed product may pay the cost of research—in others, no increased cost is chargeable because of the highly competitive condition of the market. That is, the demand for a better product at a lower selling price.

In any event, it would be only fair to state that research costs are legitimate and may be recovered from the consumer (which is not done in all cases). In some instances, research not only provides the means for securing a better product, but it may also enable the selling of that product at a lower price.

It is to be noted that a number of highly organized scientific research establishments for many industries are maintained in many parts of the United States. Some of these are attached to universities (such as the Lithographic Technical Foundation located at the Armour Research Foundation of the Illinois Institute of Technology, Chicago), some are maintained by private manufacturers and a few are maintained as purely research institutions. In the latter classification is Battelle Memorial Institute, Columbus, Ohio.

Printing Equipment Engineer doesn't know it to be a fact, but it appears that Battelle is ambitious to become a national center for Graphic Arts research. We suspect this is true because of the growing size of its Graphic Arts Division. We know the industry will applaud even though one of its largest segments (being principally fabricators) is dependent upon equipment makers and suppliers for the better things provided by scientific research.

Battelle Memorial Institute began operations in 1929. The staff, originally 30, now numbers nearly 900. The field of activities has expanded from metallurgy and fuels to eighteen well-organized divisions in chemistry, physics, mineral proces-

In 1933 Battelle mothered 80 thousand dollars worth of sponsored research projects. In recent years, about 3 million dollars have been spent annually at Battelle by manufacturers and other groups. Combined with projects in a number of other institutions, it can be seen that scientific research is an important activity in the economic life of the United States. Approximately 900 people are employed by Battelle alone. Their main objective is to find the answer to complex industrial problems. Battelle provides a common meeting ground for the industrialist and the scientist. Well endowed, it furnishes scientific research at cost. Among the activities at Battelle are those in the clinical, metallurgical, ceramic, fuel, electrochemical, physical and Graphic Arts fields.

Clyde Williams, Director
Battelle Memorial Institute
Columbus, Ohio

Supervisor Dr. R. M. Schaffert and Assistant Supervisor J. Homer Winkler, Graphic Arts Division, Battelle Memorial Institute, Columbus, Ohio. (Left) Dr. R. M. Schaffert has had a career almost wholly associated with the Graphic Arts industries. Quiet spoken and amiable, he supervises research activities of the Graphic Arts Division at Battelle. The Division is his idea and has been in existence for about two years, although Battelle for many years has conducted research related to the Graphic Arts industries. Dr. Schaffert started his career as manager of a country weekly in Nebraska. In addition to his managerial responsibilities he functioned as Linotype operator, stereotyper, pressman, and job printer. From 1923 to 1931, he pursued his vocation as Linotype operator and pressman in a number of plants while going to college. His graduate work at the University of Cincinnati was completed in 1933. From 1934 to 1936 he taught physics at Duquesne University in Pittsburgh. Starting in 1936 he was associated with the research department of Mergenthaler Linotype Company as a physicist. In 1940, Dr. Schaffert came to Battelle. First he was engaged in engineering research. Upon the establishment of the Graphic Arts Division, he was assigned to it, and is now its head. A dyed-in-the-wool scientist, and a member of numerous technical and scientific societies, he is currently a member of the Graphic Arts Committee of the Technical Association of the Pulp and Paper Industry.

In addition to his duties as Assistant Supervisor of Battelle's Graphic Arts Division, J. Homer Winkler (right) might be considered liaison officer between that institution and the Graphic Arts industries. Like Dr. Schaffert, practically all of Winkler's professional life has been associated with the Graphic Arts industries in one capacity or another. In 1925, he graduated from George Washington University with a degree of Bachelor of Science in Chemical Engineering. Prior to and following his graduation he was a research associate for the International Association of Electrotypers at the National Bureau of Standards, Washington, D. C. From 1929 until 1944, he was assistant manager of Ace Electrotype Company, Cleveland. In 1944 he became associated with Battelle's Graphic Arts Division. Mr. Winkler is secretary-treasurer of Printing Plates Research, Inc. He is also a member of several technical and scientific societies. Currently, he is Chairman of the Educational Commission of the International Association of Printing House Craftsmen.

Handling a Research Project After the potential sponsor has indicated his desire to undertake a research project, members of the Battelle executive staff and the specialists in the field of research covered study the problems to determine whether it is a good research project. If they decide that it has promise, they estimate the best rate of effort and the cost.

After it has been received at Battelle Memorial Institute, Columbus, Ohio:

1. The project is assigned by the Institute Director to the proper Division. For the purpose of this article it is assigned to the Graphic Arts Division.
2. Supervisor of Graphic Arts Division assigns research men to the project.
3. A Battelle engineer may then spend a week in the sponsor's plant to become familiar with plant operations, and to talk to plant executives and workmen.
4. A thorough literature and patent survey related to the new project often times is made.
5. Round robin meetings among interested experts are held at Bettelle; the supervisor of the project makes report; after discussion among experts, the plan of attack is formulated.
6. Actual laboratory work is started.
7. As the work proceeds, monthly progress reports are submitted to the sponsor.
8. Meetings between the division or divisions to whom the project has been assigned and representatives of the project sponsor are held to settle any questions which may arise, and to obtain fullest cooperation between parties concerned; frequent visits to sponsor's plant are made by research men.
9. After the work has progressed sufficiently, a semi-commercial pilot plant may be set up at Battelle.
10. Then actual commercial production starts to make sure that all "bugs" have been eliminated.
11. Sometimes the sponsor must come back to Battelle for additional research to solve problems that arise after actual production has been carried on for a time. These are problems which cannot be anticipated until large-scale production has been carried on for a time.

Views in a Number of Laboratories

Graphic Arts Division, Battelle Memorial Institute, Columbus, Ohio. Here, chemistry, science and much infinite patience are required to solve problems for sponsors of research programs.

1. Charles D. Oughton making an electrochemical determination in connection with an etching problem.
2. The edge gilding of a book being examined by Lewis E. Walkup.
3. The cause of failures in a resist film specimen is the subject of discussion by, left to right, Paul Matthews, Julian W. Nash, and Dr. Donald J. Byers.
4. Melvin F. Browning (right) assisted by Rexford W. Jones engaged in perfecting the plastic electrotype molding process.
5. An offset proof press is frequently used for tests of lithographic plates and experimental procedures. David G. Black is operating the press.
6. Electrophotography is a Battelle development. Richard N. DeWitt is adjusting the apparatus prior to preparing a plate by this method.
7. Improvements in the manufacture of photoengravings are being investigated by Edward N. Wise (left) and Russell Deubner (right) as adjustments are made on an experimental setup.

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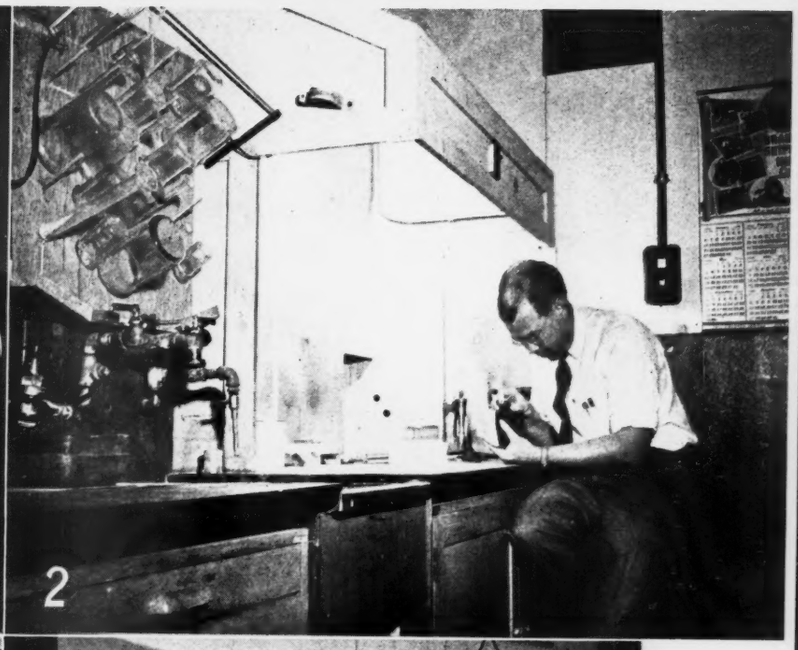
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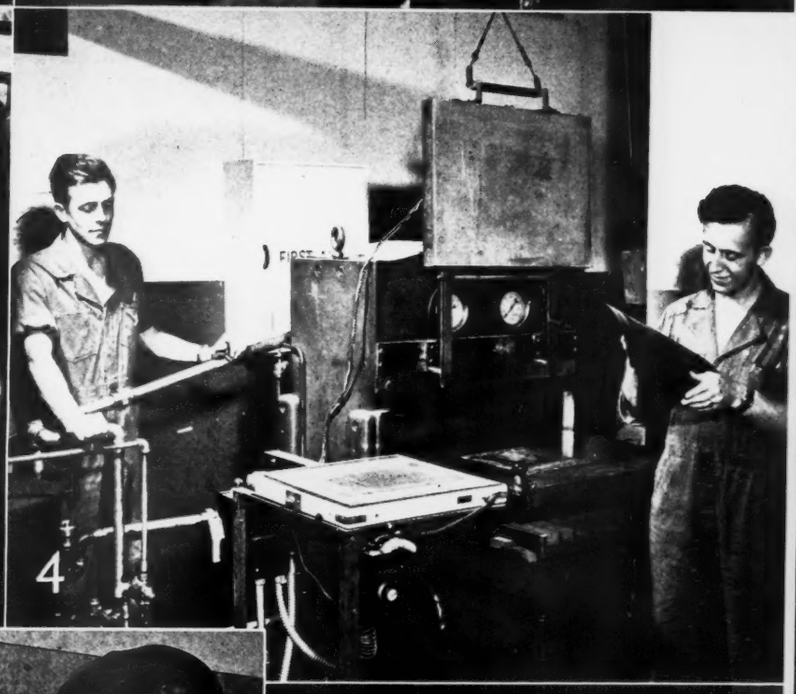
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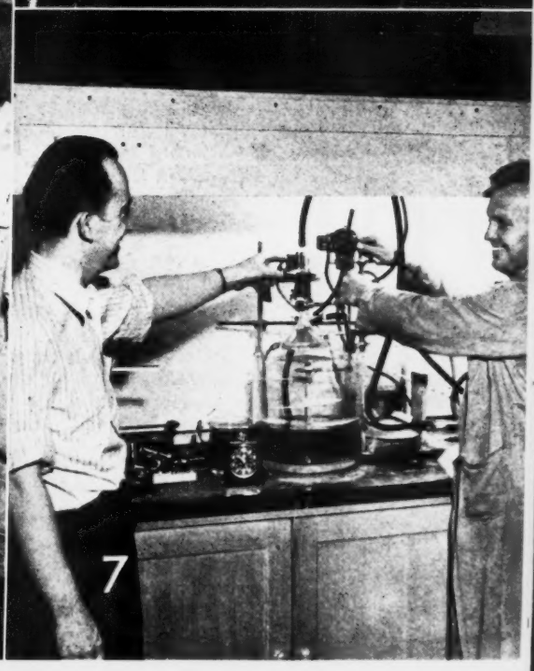
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sing, electrochemistry, ceramics, production research, welding, and Graphic Arts research. The Institute today is known and respected throughout the world of research and engineering.

Studies on problems connected with the Graphic Arts started at Battelle in 1933 and were concerned with electrotype metal. This resulted in the development of a method of age-hardening of electrotype metal. Additional studies resulted in an accelerated method of age-hardening of electrotype metal. A research survey was then made of electrotype manufacturing methods for the International Association of Electrotypers and Stereotypers, Inc., in 1935. A group of electrotypers later organized a nonprofit research corporation known as Printing Plates Research, Inc. This organization sponsors an effective program of research at Battelle that has been in progress since 1941 on the development of improvements in electrotype manufacture. A method of preparing form rectification prior to molding, an iron plating solution, and a method of plastic electrotype molding from which plates are molded in place of wax, [1]have resulted from this study.

In the spring of 1944, a study of problems connected with envelope manufacture was initiated and is still in progress.

Recognition of the work at Battelle connected with problems of the printing industries was made in the fall of 1944 when a noticeable increase in the need for such research was apparent. At that time a Graphic Arts Research Division was formally organized. Under the supervision of Dr. R. M. Schaffert, it has grown to comprise a technical staff of 22 scientists, engineers, and assistants.

Research investigations are now being made on improvements in electrotype manufacture, improvements in envelope manufacture, development of an improved resist for use in producing etched metal items, electrophotography, a study of magazine production improvements, a printing machine improvement, improvements in photoengraving, development of an improved method of edge gilding, such as is used on books, playing cards and the like, a study of adhesives used in book manufacture, and the development of an improved zinc alloy for lithographic plates. The activities of this division also include participation in educational and research programs related to the Graphic Arts industry.

Sponsors of the above work receive regular progress reports and every effort is made to obtain results of a practicable nature that may be readily applied to commercial practice. The Sponsors include companies such as Time, Inc., L. F. Grammes & Sons, Inc., U. S. Playing Card Company, and the National Publishing Company. Other representative organizations that are sponsoring studies in the Graphic Arts Research Division of Battelle are Printing Plates Research, Inc., Photo Engravers Research, Inc., and the Book Manufacturer's Institute.

The work of the Graphic Arts Research Division is augmented by an extensive library, staffed with trained technicians, making possible current and reference literature studies, patent searches, and the maintenance of familiarity with developments in the industry.

The divisions devoted to other technical fields present a source at Battelle for consultation and ideas that may be applied to a specific printing problem. In other words, if a laboratory runs into a special problem, perhaps the knowledge and experience of another group or division will help solve the problem. The Graphic Arts Research Division has available at the Institute adequately equipped and staffed service divisions such as machine and pattern shops, photographic laboratory, instrument laboratory, physical testing departments, analytical chemistry laboratories, micro and spectrophotometric analysis groups, spectrographic laboratory, and a constant temperature—constant humidity laboratory.

The combination of experienced knowledge on how research should be accomplished, plus a highly qualified technical staff working in adequately equipped laboratories, provide fine facilities for solving printing industry problems. In addition, the Graphic Arts Research Division staff has considerable familiarity with the art and practice of the Graphic Arts industry.

[1] U. S. Patent No. 2,400,518.

Noise Reduction in Newspaper Plants

By ROBERT W. DICKERSON*

**Architect and Engineer, Cleveland, O. Published through courtesy of Walter C. Johnson, Editor, SNPA Mechanical Bulletin.*

ACOUSTICAL treatment for a newspaper building falls somewhat in the category of air conditioning in that it has unquestioned value, means a great deal more in some locations than in others—and presents some problems.

There can be no question as to the beneficial effects of noise reduction. Improvement in efficiency and decrease in fatigue are immediate and tangible results. Cost of installation and problem of maintenance are the principal factors which require analysis of the value of acoustical treatment in a newspaper building. It is also obviously important that the acoustical treatment be correctly designed and suitable for the particular job it is to do.

When newly applied, the efficiencies of most of the well known types and brands of acoustical material are quite comparable. They have all been compounded and designed to conform to well established standards. It is in their long term use, however, that advantages accrue to certain types.

Of the systems of treatment most generally in use, the following types are most frequently encountered.

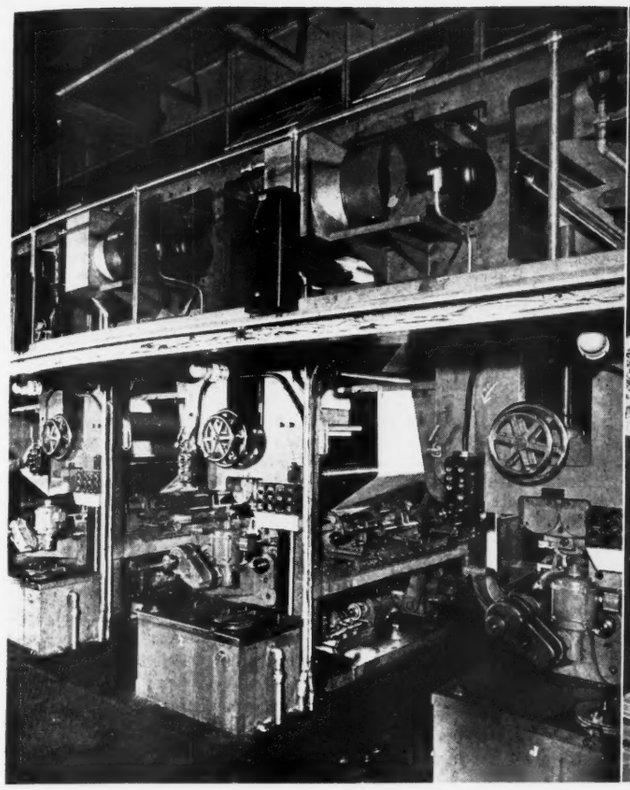
(a) The block type is made of more-or-less spongy, open, materials and depends upon porosity to absorb sound. The materials of (a) type are suited to use in offices and other locations where they will not soil readily. Painting, even with special paints, reduces the efficiency of many of them.

(b) The perforated type is also of similar material but has numerous small perforations nearly through the material. It depends upon the cumulative surface of these holes or perforations for its effectiveness.

(c) The hard surface type consists of a thin hard board of transite, masonite, or some times of metal. It is perforated similarly to type (b) but with holes entirely through the board. The board is then attached by nails or screws to wood or metal furring strips set to leave 1 in. to 2 in. of space behind the board. This space behind the surface board is then either left open or is filled with glass wool, mineral wool or similar sound absorbent material, depending upon the degree of effectiveness desired. Another type might also be mentioned, that of acoustical plaster. It was formerly more popular than at present, having been largely supplanted by the various block materials. Acoustical plaster, being highly porous, is also fragile and difficult to maintain.

The perforated materials, either (b) or (c) are entirely unaffected by painting and are desirable for use where dirt, smoke, or other soiling agents make painting or cleaning necessary.

In general, it may be said that acoustical treatment of walls is rarely needed. For a pressroom, perhaps, or for a telegraph or news printer room. Wall treatment is pretty much limited to radio studio work, and to spaces where special impact noises are generated or where a special degree of quiet is needed. Acoustical treatment is considered a "must" throughout business and editorial offices. It is also a great help in the composing room. There is a general trend toward pressroom treatment, now that the perforated types have demonstrated their effectiveness and ability to accept cleaning and painting. For the stereotype department, mailing room, and similar areas there may be some question as to its being profitable. There is still another type of acoustical treatment which might be mentioned—shredded old newspapers blown or sprayed on the surface with an asphaltic binder. It is excellent insulation as well as acoustical treatment and has been used for insulating the roofs of steel railroad cars.



At left is shown one of the units of the 12-unit Hoe Rotogravure Press recently installed in the St. Louis *Post-Dispatch*. Also can be seen portions of the mechanical drying mechanism which, together with the volatile inks used, insures quick separation of the vehicle from the ink pigment. Recently, 85 line Ben Day has been used with marked improvement over 65 line screen.

Here the comic sections of the St. Louis *Post-Dispatch* are being spewed from the folder in three colors and black. Press has capacity of 45,000 copies per hr. This press will also be used by the *Post-Dispatch* for printing *Pictures*, a magazine feature. Eight full pages in color in a 16-page section may be printed at one time. Paper used is 34 lb. roto.

Sunday Comics by Rotogravure

St. Louis Post-Dispatch *publishes first 12-page section by that process with new equipment on September 8*

THE St. Louis *Post-Dispatch* made newspaper history on September 8 when it issued its usual Sunday comic sections by the rotogravure process. It is thought this was the first time anywhere that a complete comic section of four colors had been printed at one time on a rotogravure press.

The new press which makes this process possible is a Hoe 12-unit rotogravure press. Ordered in 1941, it is the first post-war press of this type to be built, the cost of installation exceeding $400,000. It has a 24-page, 45,000-copies-an-hour capacity.

This process of printing requires a type of ink different from that used by the ordinary comic press on which an oil-base ink is used. With the old process the ink was absorbed by the paper. The new press uses ink with a solvent base which, aided by a mechanical drying process, evaporates immediately, leaving all the color on the surface of the page. Thus greater luminosity and higher fidelity of color are obtained. The new comic section is reproduced from the usual comic advertising feature mats furnished heretofore by syndicates and advertising agencies. The finished product is one of great smoothness and brilliance of color.

Many functions of the new press are automatic, with push-button control. One of the improvements is a full speed splicer with electrically controlled tension and semi-automatic paster. Waste of newsprint and loss of time are reduced since it is not necessary to stop the press in order to make the changeover to full rolls of paper.

The *Post-Dispatch*, which printed comics in color for the first time in St. Louis on September 16, 1894, becomes the first newspaper to apply this process to the printing of its Sunday comics. A number of eastern dailies have purchased similar Hoe presses and will use the new process when their equipment is set up.

The new press is part of the rebuilding program now in progress at the *Post-Dispatch*. The rotogravure section, *Pictures*, an outstanding feature of the Sunday *Post-Dispatch*, will also be printed on the new press, making possible eight pages of full color in a 16-page section, as compared with the four pages in full color possible on the old press.

Character Building by Salvation Army

The ingenious use of recreational and educational facilities is being used by The Salvation Army to make its boys' clubs and community centers more attractive to youngsters than street or back-alley gangs.

America's young people are looking to everyone of us today. Forty million children—leaders of the nation tomorrow.

The Salvation Army is laying emphasis upon its character-building program for these youngsters who today face many new temptations in the back-wash of war.

Boys and girls' clubs, community centers, summer camps, playgrounds in congested areas, daily vacation Bible schools—these are just a few of the many projects of The Salvation Army's new program. With heart to God and hand outstretched to little children, The Salvation Army is "Marching Forward to a Better World."

Richard Chamberlin, treasurer of Printing Industry of America, Inc. presiding at the session on printing equipment at the Sixtieth Annual Convention of PIA held in Atlantic City, September 9-12. In the photograph are (left to right): W. M. Pollock, Chief Engineer, American Type Founders, Inc., Elizabeth, N. J.; Victor W. Hurst, Manager, Graphic Arts Sales Division, Eastman Kodak Co., Rochester, N. Y.; R. J. Butler, General Manager, Fuchs and Lang Mfg. Co., New York; C. R. Kaddeland, Chief Specialty Engineer, Harris-Seybold Co., Cleveland; Walter Soderstrom, Secretary, National Association of Photolithographers; Lex Claybourn, L. W. Claybourn, Inc.; Mr. Chamberlin; R. Verne Mitchell, President, National Printing Equipment Association; Fred W. Hoch, Fred W. Hoch Associates, Inc., New York; Frank M. Sherman, Executive Secretary, International Trade Composition Association, Philadelphia; Herman R. Freund, Chief Engineer, Intertype Corp., Brooklyn; Everett R. Eaton, Manager, Magazine Photo-Engraving Corp., Stamford, Conn.; Carlton Mellick, Sales Manager, Miehle Printing Press and Mfg. Co., Chicago; George J. Walsh, President, Offset Engravers Associates, Inc., New York; and John L. Kronenberg, S. D. Warren Co., Boston, Mass.

PIA *speakers discuss technical future of the industry in Atlantic City—Cooperative research program proposed*

"THE Technical Future" was the subject of a panel discussion led by executives in various branches of the Graphic Arts and presented by the National Printing Equipment Association, at the Wednesday morning session of the Sixtieth Annual Convention of Printing Industry of America, Inc., held in Atlantic City, September 9-12.

R. Verne Mitchell of Harris Seybold Co., Cleveland, president of the NPEA, was chairman of the session, at which a panel of experts answered written questions from the floor following the presentation of the formal talks. The panel included W. M. Pollock, Chief Engineer, American Type Founders, Inc., Elizabeth, N. J.; Victor W. Hurst, Manager, Graphic Arts Sales Division, Eastman Kodak Co., Rochester, N. Y.; R. J. Butler, General Manager, Fuchs and Lang Mfg. Co., N. Y., N. Y., C. R. Kaddeland, Chief Specialty Engineer, Harris-Seybold Co., Cleveland, O.; Fred W. Hoch, Fred W. Hoch Associates, Inc., New York, N. Y.

PIA REPORT

Since Printing Equipment Engineer *is primarily a technical magazine, we are reporting only two sections of the September 9 to 12 program of the Printing Industry of America convention at Atlantic City. Definite trends toward volume printing are indicated from the remarks of nationally known speakers. The proposed joint PIA-GPO research program a brief summary of which is included in this report merits deepest consideration by our executive readers.*

Also, Dr. W. W. Mock, In-Tag Division, Inter-chemical Corp., New York, N. Y.; Frank W. Sherman, Executive Secretary, International Trade Composition Association, Philadelphia, Pa.; Herman R. Freund, Chief Engineer, Intertype Corp., Brooklyn, N. Y.; Everett R. Eaton, Manager, Magazine Photo-Engraving Corp., Stamford, Conn., Carlton Mellick, Sales Manager, Miehle Printing Press and Mfg. Co., Chicago, Ill.; George J. Walsh, President, Offset Engravers Association, Inc., New York, and John L. Kronenberg, S. D. Warren Company, Boston, Mass.

Precision Plates as Gauge of Accuracy

The Foundation of Letterpress Printing was the subject of the talk by L. W. Claybourn of L. W. Claybourn, Inc., Chicago, at this session. "A few years ago rotary high speed printing was used exclusively for long-run publications and mass production printing. High speed rotary presses were prohibitive for commercial work, requiring moderately short runs. "Because of modernization, that day is passed." Mr. Claybourn said. He stated that the plans of the largest suppliers of printing equipment in the world include the development of high speed rotary methods for the commercial field. He mentioned specifically the contribution of C. B. Cottrell & Sons Co. of Westerly, R. I., and the plans of the Miehle Company of Chicago and the Harris-Seybold Company of Cleveland to put on the market high speed rotary presses for letterpress commercial printing.

Mr. Claybourn dealt primarily with "the most important phase of letterpress printing — preparation". He recommended the use of precision curved pretested plates, that require little or no makeready as a means of eliminating the "hours of down time on rotary presses caused by inadequate curved plates."

"The makeready cost of the conventional or ordinary curved printing plates, produced by old methods, equals or exceeds the cost of the plate itself . . . By the use of proper tools and machinery which are available, curved pre-tested plates can be made that will permit the printer to plate up the rotary press and start production in less time than the time required to plate up and register on a flatbed press."

Precision plates can greatly increase efficiency in flatbed printing also, Mr. Claybourn said. "They will last longer and yield better quality of printing. The printing plate, whether it be curved or flat, should be made so accurate that it becomes the standard gauge of accuracy in starting the job."

Buying Offset-Lith Equipment

Walter Soderstrom, executive secretary of the National Association of Photo-Lithographers, whose subject was *When Printers Buy Lithographic Equipment*, pointed out certain factors that should be considered by letterpress printers contemplating the purchase of lithographic equipment. Most lithographic equipment manufacturers, he said, "have piled up a volume of orders that will keep their factories operating full time for a long period. They face constantly shortages of critical materials, and their progress is hampered by labor demands and misunderstandings."

"Equipment manufacturers in the lithographic field," he said, "are reluctant to sell machinery to those who haven't a valid reason for purchasing it." Fundamentally, they want to do business with firms who, because of their strength and acumen, will grow and thereby purchase additional presses."

Nevertheless, he pointed out, "Lithographers, in the main, have an awareness that there is a trend in the letterpress industry toward the combining of printing and offset in the same plant, or at least under the direction of one individual

concern. More power to printers who can adapt themselves to a process that is considerably different from that which is letterpress production."

Prices of various lithographic presses, he said, "will undoubtedly be higher than in recent years. The general impression prevails that lithographic equipment, as a rule, will sell at from 25 per cent to 35 per cent above pre-war prices.

"I believe that virtually every manufacturer of lithographic equipment is busily engaged in designing post-war presses, etc., to fit the needs of the majority of buyers."

On the subject of new equipment versus second-hand equipment, Mr. Soderstrom stated: "Offhand I would say that one should unquestionably buy new equipment. Today, however, the problem facing the printer who is determined to add a line of lithographing is rather difficult" since manufacturers are flooded with orders. "I feel it necessary to utter a word of caution if you decide to invest your capital in second-hand equipment. Remember that an old press, or one that has been worn down from excessive use, should be thoroughly rebuilt before you install it in your plant."

"Manufacturers of lithographic cameras and other photo-mechanical equipment are making their various products as fine as they know how," Mr. Soderstrom said. "In the future there will be improvements in camera methods, but I am sure that the complete redesigning of present equipment will not be necessary."

"On the whole, I do not think that radical or sensational changes are in the immediate horizon. I believe that a few years will elapse, at least, before momentous changes in equipment will take place. By then, any purchases made now will have given enough service to warrant their replacement with whatever improvements are presented at the future time."

Rotogravure's Amazing Development

George T. Bailey of the Photogravure and Color Co., New York, gave a picture of the present and the future for gravure. He defined the three branches of gravure —hand-printed photogravure, sheet-fed power-press photogravure printed from plates, and rotogravure printed from cylinders on high-speed web-fed rotary presses.

"Rotogravure is the branch which has developed amazingly in recent years, especially in newspaper and magazine work where large editions have to be produced at low cost and at high speeds —web speeds of 1200 f.p.m. and 15,000 i.p.h. per cylinder are not uncommon, and the demands of the publisher customer especially is for more and more speed with the same quality."

"There have been many developments in recent years in platemaking," Mr. Bailey said. "An important development in color platemaking is the News-Dultgen process named after the inventor, Arthur Dultgen, of the New York *Daily News*, which has been in ever-increasing use since 1938." This process he described as using a round dot which is not only varying in depth but in size. This gives the illustration new flexibility of expression, and incidentally, gives a better wearing plate or cylinder on the press." Other platemaking processes mentioned by Mr. Bailey were the Sportelli round-dot process, and the Intaprint method.

"I am told that we are to expect developments in the making of color separations which will eliminate much of the manual retouching and make for more faithful reproduction without the 'interpretation' of the retoucher. Research which is already under way and still to be inaugurated, will bring many more developments in platemaking, in inks and in printing equipment. The research which has been done has largely had no trial since the impetus in gravure began only some ten to fifteen years ago, and we have had several years out for World War II."

Discussing the sheet-fed process of gravure, Mr. Bailey pointed out that the sheet-fed presses now being used were made by three manufacturers: Harris-Seybold Co., Miehle Printing Press and Mfg. Co., and Linotype and Machinery Ltd., of England, through the General Printing Machinery Corp. of Brooklyn. The war brought a suspension of manufacture of these presses, he stated, but both Harris-Seybold and Miehle expect to resume manufacture in the future.

"The bottleneck in the further development of sheet-fed gravure right now is press equipment, and it is to be hoped that this may be remedied even in the 1942 models before too long, so that supply may begin to approach the demand that is ever increasing for the quality process of reproduction which is photo-gravure."

Lithography and Research

Wade E. Griswold, executive director of the Lithographic Technical Foundation, discussed the function of the foundation. "Seldom, if ever, in the history of the American economy has an industry had as much benefit from cooperative, scientific research, education and services as had the lithographic industry in relation to the small amount spent compared to their dollar volume of business."

"Our membership includes between 700 and 800 plants owning lithographic equipment, more than 250 suppliers and more than 700 skilled craftsmen. You can judge for yourselves their willingness to place the responsibility on this institution for filling the research and educational and service needs of the industry to the extent and degree that will provide

The 1946-47 Officers and Executive Committee of Printing Industry of America. Front row—Four officers all re-elected (left to right): Richard Chamberlin, Washington, treasurer; Donald L. Boyd, Huntington, W. Va., vice president; James F. Newcomb, New York, president; Ralph Thomas, Detroit, secretary. Rear row (left to right): Frank Beatty, executive secretary, Graphic Arts Association of Illinois, representing secretaries of PIA affiliated local associations; Robert Caffee, Pittsburgh; Fred Little, Wilmington, N. C.; Frank Pfeiffer, Dayton, Ohio; Clyde Murphy, St. Louis; Harold W. Hill, Cleveland; Allerton Jeffries, president Master Printers Section, Los Angeles; Carl E. Dunnagan, president of Union Employers Section, Chicago; James R. Brackett, general manager, Washington.

adequate insurance for the future," Mr. Griswold said.

"In addition to supplying technical and research bulletins and papers as a means of channelling the results of research to the men who can make use of the information, we undertake to perform a simple educational purpose.

"We prepare the shop manuals, the texts and the training courses based on generally accepted practices and new information growing out of research. All of our technical and educational information is published freely and made available in convenient publication form at cost."

"It seems to me that the very existence of this institution for twenty-two years and the fact that it has achieved effective cooperation on scientific research, education and service is an indication of the difference between the problems inherent in lithography and those of other processes. The men supporting the programs of this institution are practical business men. They are as concerned as are men in other graphic arts processes with the advancement of the business of putting ink on paper. Knowing both the possibilities and the peculiarities of the process, they have chosen to support the scientific research, educational and service program of this institution."

Proposed Research Program

Hon. A. E. Giegengack, United States Public Printer, delivered a paper on *A Research Program for the Printing Industry of America.* Mr. Giegengack has spoken upon research on several occasions, thus indicating willingness to enlist his offices in initiating a joint PIA-GPO program in the world's largest printing plant.

The Public Printer warned that "many of our customers are going to turn to other processes and other means of getting what they need with the resultant loss of business (to the commercial printer) and possibly bankruptcy to many now in the printing trade."

He quoted from a recent letter received from President James F. Newcomb of PIA. Incorporated in the letter was an outline of a research program in which the GPO and the commercial printing industry would be interested. The outline was developed with the cooperation of Alan Harvey, a management engineer who is vice president in charge of production of a commercial printing plant in New York.

Mr. Giegengack expressed willingness to cooperate with PIA. Immediately following is a briefed summary of the proposed research program:

Printing Industry of America, Inc. believes that the developments arising from research opportunities in the Government Printing Office should be made available to private industry so that industry as a whole could benefit.

It is our belief that the undertaking of a comprehensive research program by the Government Printing Office and the publication of the results of this program would be an incentive to greater efficiency in the Government Printing Office itself and would be self-liquidating. No additional expense to current operations would be required.

1. Testing:

The Government Printing Office is the logical laboratory in which equipment and materials, sold or to be sold by manufacturers, should be tested under field conditions. The Government Printing Office should publish the results of tests which it makes on equipment and materials used in the commercial printing industry. Tests could be run on presses, cutters, spray equipment, paper, ink, metals and each and every important item entering into the manufacture of printed materials.

2. Standardization: of Materials:

A research program could determine what performance should be expected for various types of inks, and minimum specifications set up to meet production requirements. In this way, it should be possible to encourage the production of standard commodities. Also contemplated in such a program should be the standardization of weights, measurements, and nomenclature, etc. within the printing and allied industries including paper, ink, photoengraving, etc.

3. Labeling and Specifications:

Once standards of quality and performance are achieved for materials and equipment, the Government Printing Office should establish a system of informative labeling and precise specifications so that the buyer can have a sound index of performance in advance of purchase.

4. Manufacturing Methods:

Because the commercial printing industry involves many highly developed skills and careful judgements, it has suffered from a tendency toward custom developed manufacturing methods, a sound research program should include the study of basic manufacturing methods to determine the most efficient techniques. The Government Printing Office has the facilities to inquire into the simplest and most efficient methods to reduce time and relate the makeready problem to the general operations of the plant. How can time and cost be saved in these operations and how can specific programs be developed for various sizes of plants? Other problems deal with the handling of materials, melting of metals, plant housekeeping and safety, storage and filing systems, power drives of presses. There is a whole field of research in the design of proper work places within the printing plant, proper lighting, elimination of noise. The files of research into manufacturing methods is unlimited, but the key to this research should be the application of sound engineering concepts within an industry which has been plagued by handicraft methods.

5. Management Methods:

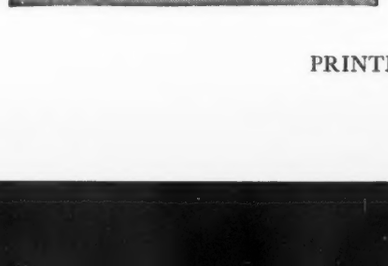
Because it is an industry composed of many thousands of small or medium sized units without continuous engineering supervision, many management programs cannot be applied. An effort should be made to develop simple management procedures so that the best techniques of the Government Printing Office can be widely applied throughout the industry.

6. Personnel:

Historically, printing skills have been learned through serving an apprenticeship. Yet, little or no control exists in the selection of personnel who are to serve such apprenticeships. But students of printing and of management recognize that the industry's cadres could be vastly improved if scientific methods were developed for the selection and training of personnel including the testing of mechanical and mental aptitudes.

The end use of the fully developed program would be by publication in book form by the Government Printing Office of a yearly manual kept up-to-date and offered for sale by the Government Printing Office to the 37,000 commercial printers in the United States.

This program and its purpose would be similar to the excellent work done for farmers by the Department of Agriculture in the distributing of its year book for better farming methods.



To Handle Pulp Sales

R. K. Ferguson, president of the St. Regis Paper Co., New York, N. Y., has announced that effective January 1, 1947, the company's bleached and unbleached sulphate pulp will be sold exclusively by the St. Regis Sales Corp., the St. Regis sales subsidiary.

St. Regis pulp formerly was sold by Bulkley, Dunton Pulp Co., Inc., of New York, as brokers.

William McNair, assistant pulp sales manager, now on loan to the OPA, will return soon to reestablish and manage the Chicago pulp sales office.

Run-of-Paper Color Clinic — An unusual as well as highly educational feature of the recent Illinois Newspaper Mechanical Conference was the clinical meeting held in the plant of the Waukegan (Ill.) *News-Sun*. Clarence R. Snethen, Mechanical Superintendent and his associates of the *News-Sun*, prepared the clinic to show how a 6 col., 15 in. three-color and black advertisement is handled from plates to actual printing on the press. The interest of the executives attending the clinic is demonstrated by this illustration.

R.O.P. Color Clinic

was feature of Illinois Newspaper Mechanical Conference

ABOUT 250 newspaper production and mechanical executives attended the conference in Waukegan, Ill., on Saturday and Sunday, September 14 and 15. The Karcher Hotel was headquarters for the conference. Clarence Snethen, Mechanical Supt. of the Waukegan *News-Sun*, presided. The *News-Sun* plant held considerable interest for the visiting executives, partly because of the recent addition of Teletypesetter equipment and partly because of the r.o.p. newspaper color clinic session and demonstration run held right in the plant.

During the conference, the Illinois Conference Research Committee submitted its report. The committee consisted of:

Personnel Training — Don Shelley, Chairman.

Technical Training—Alex Massengale.

New Equipment—Earl Anderson.

Linecasting Equipment — Clifford Entler.

Composing Room Production—Duane Smith.

Printing Methods—Russell Miller.

In the report were discussed personnel and technical training, new equipment and methods, engraved newspapers, facsimile radio, offset printing and color printing.

On Sunday afternoon, a number of departmental clinics were held in the *News-Sun* mechanical departments as follows:

Composing Room—Chairman: Chas. W. Hayden, Peoria Newspapers, and Earl Anderson, Rockford Consolidated Newspapers.

Machinists—Chairman: Clifford Entler, and Duane W. Smith, both of the Decatur *Herald-Review*.

Photo-engravers — Chairman: Wilbur Auspurger, Peoria *Star*, and Earl Ford, Bloomington *Pantagraph*.

Stereo and Pressroom—Chairman: Elden Telford, DeKalb *Chronicle*, and R. Skinner, Peoria Newspapers.

R.O.P. Color Clinic

On Sunday afternoon, the r.o.p. Color Clinic was held in the plant of the Waukegan *News-Sun*. Actual preparation of a 6 col., 15 in. three-color and black advertisement was carried through from form preparation to the actual printing of an 8 page section was demonstrated.

A summary of operations attendant upon printing an r.o.p. color advertisement was prepared by Mr. Snethen which is printed in full below.

Summary of *News-Sun* Color Technique

Color printing on newspaper rotary presses calls for a high degree of accuracy.

On newspapers, time is an all important element, yet nothing must be neglected in preparing the plates to obtain register.

On all color ads the *News-Sun* maintains a three-day deadline. That means three days after the ad is OKd. This allows sufficient time for all departments to handle even the most complicated color ad without any overtime.

The biggest percentage of material supplied for color ads will be mats. In most cases these will be baked mats and on these you should not experience too much trouble. However, when you are supplied color ads on ordinary dry mats, difficulty will be experienced in getting uniform shrinkage on each color. Lack of uniform shrinkage makes it impossible to get perfect register. One color and black will work fairly well but more colors than this are not practical. We do not accept color ads on dry mats.

Whenever possible place color ads on pages which go against the center ring on the press. This eliminates the necessity of moving the plates after they are registered. In other words if you put color ads on the outside of the press cylinder, you cannot register until you get the inside plates. If you should have a replate on an inside plate you would be forced to re-register the color plate when it is on the outside. Any re-register of color will slow down the press run and probably make the run late.

Color Ad Composition

In the composing room, the greatest possible care is required in preparing the form. All material used in mounting plates should be steel base. Avoid any basing material that is springy. Make form as solid as possible. Fasten down all plates securely with tape.

Our chases used in color work are 0.916 in. high and are milled on the surface, to reduce mat slippage.

When form is OK and ready to mold, lock up a piece of 12 pt. rule at bottom below the page itself. Place it 2 pts. below the bottom of page. A notch in the rule is 18 pts. in width. When plates are cast this rule can be used to measure accurately the shrinkage on each plate. Just before plates are placed on press, rout off this rule.

Every open space in the ad is filled up with dead metal in order to secure uniform mat shrinkage. On shell casts the openings are filled with 8 pt. linotype slugs and on zincs the dead space is filled with zinc scraps from the engraving room. The nearer uniform you can keep the amount and location of dead metal, the better control you will have over mat shrinkage. Too much emphasis cannot be placed on this feature of color stereotyping.

(Continued on next page)

Illinois Conference Officers — Alex Massingale (left) of Peoria Newspapers, Inc., heads the Illinois Newspaper Mechanical conference during the year 1946-47. Otto Kurrle, Moline (Ill.) *Dispatch* (at his side) was elected vice president. Clarence R. Snethen (third from left) mechanical superintendent of the Waukegan (Ill.) *News-Sun*, is retiring president, and Howard M. Colton (right) of the Bloomington (Ill.) *Pantagraph*, was re-elected secretary-treasurer.

Directors for the year were chosen as follows: Don Shelley, East St. Louis *Journal;* Wilbur Auspurger, Peoria *Star;* Clifford Entler, Decatur *Herald-Review;* Edward Raymond, DeKalb *Chronicle;* Ralph Skinner, Peoria Newspapers, Inc., and Clarence R. Snethen, retiring president, Waukegan *News-Sun*.

Registering Color Forms

The form is placed on the mat roller in the same position as you would roll a mat. Then the form is inked and a proof is rolled on the cellophane sheet. After proof is taken, dust off the printed side of the cellophane with talcum powder. This will dry the ink at once. Cellophane should be heavy so that it will not stretch. Cellophane used by *News-Sun* is 0.012 in. thick and may be purchased at Sears Roebuck & Co.

Next, register the cellophane over the key form in the chase and place thumb tacks at head of chase in holes drilled there. Be sure to get perfect register as this is your key sheet to be used throughout the registering procedure in the composing and stereotype departments.

Rolling Color Mats

When you are sure of the register, remove the cellophane and thumb tacks and roll the mat. Next put cellophane sheet back on chase and replace thumb tacks and check the register. By doing this you can see whether the ad plate has shifted while being rolled. Do this before and after rolling each color mat. If you are careful to get a perfect register between all colors, you'll save much trouble and many hours of registering when plates are placed on the press. With perfect register on the part of the composing and stereotype rooms there is no necessity to twist plates when they are put on the press.

In rolling, use mats from the center of the package as the moisture content will be more uniform.

Our procedure is to roll two mats of each color. If you spoil one in casting you will have an extra one. This eliminates any necessity of re-registering the forms again in the composing room.

Pre-Scorching Color Mats

In backing up color mats be careful to pack each mat exactly the same. This is another factor which helps keep the mat shrinkage uniform. Mark each mat to show its color.

Before scorching the mats, examine each color carefully and select the one that will shrink the least. We pre-scorch all mats before putting them in the Sta-Hi. Next take the mat selected as one with the least shrinkage and pre-scorch.

During this pre-scorching, measure the rule at the bottom until satisfied that it has shrunk as far as possible. Set the gauge so you can measure each mat in turn as it is pre-scorched.

Measure the bottom rule of each mat as it is taken from the Sta-Hi. Each must be exactly the same width when measured on the bottom rule. Use another gauge for this operation so the gauge used on the pre-scorcher is not changed.

Casting Color Plates

In casting, measure each plate on the bottom rule and keep each plate uniform in width. The gauge used for pre-scorcher measure can be changed and used for this as the pre-scorching is completed before starting to cast plates.

It is good practice to throw away the first three casts from each mat. Doing this will give the pressroom better plates.

It may be necessary to throw away several of the first few casts from each mat to secure perfect register with the measuring gauge. Care during casting will save time and trouble in registering the various color plates on the press. Do not cool any of the plates by using water. Set them on the floor and let them cool slowly. If all precautions have been taken the plates will register.

Mark each color plate as it is cast with the number of the cast on the back of the plate. For example: the first red plate cast mark on the back of plate "Red 1". The next plate cast "Red 2", etc. By these marks the pressman can use a complete series in plating up. For example: Black 2—Red 2—Blue 2 and Yellow 2. This system eliminates any chance of variation between different casts.

In routing color plates for the press use a small router bit—1/16 in. or not over 1/8 in. Larger bits will pull the surface of the plate thus making register impossible.

Color Presswork

In printing color work the correct sequence of colors is to print the lightest color first with the black printing last.

In setting up the press and registering, first put on the black plates in correct position as to page margins. Then put on yellow plate and register yellow into the black. When register has been obtained, lift the rollers from the yellow plate and put on the blue and register it into the black. Lift the blue rollers and register the red plate into the black plate.

The plates should now be in register except for some compensation at the heads. Drop all rollers and run enough copies to reach the speed at which it is expected to run the edition. From these printed copies any corrections can be made. If one color laps to the other a little, trim off with a stereotyper's chisel.

When there are only a few spots of color on a plate, it is well to undercut the plate 0.006 or 0.009 so as to avoid punching and thus breaking the web.

In shimming plates use cardboards or strips of mats. Do not use metal, for if one comes loose it may damage a plate.

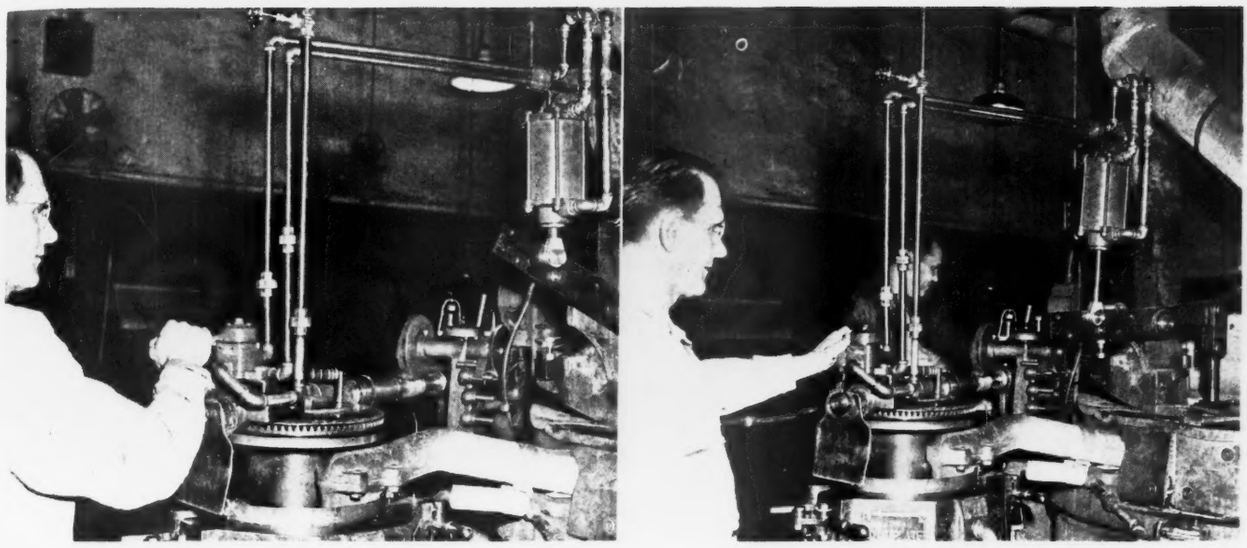
In order to secure good color, particularly on solid areas it is necessary to use harder cylinder packing than for ordinary black printing. If you get level sterotype plates you can use a very hard packing. This will give you a sharper printing reproduction.

As to running speeds, experience on one's own press will indicate the speed which holds register best. The *News-Sun* runs all color run from 15,000 to 18,000 per hour.

Color Printing Inks

Inks can be purchased in an unlimited variety of colors and shades. But best results on 3-color and black can be secured by using the ANPA selected colors. These were adopted by the ANPA Mechanical Conference in 1937 and can be secured from any ink manufacturer. With these ANPA colors you can duplicate nearly any 3-color and black ad as all the larger advertising agencies have adopted these colors so as to secure uniform color printing anywhere in the United States.

(Continued on Page 56)



Air-Operated Pump Insures That Stereo Plates Will Be Cast Alike

In the plant of the Cincinnati *Enquirer*, Production Manager H. D. Rindsberg and Stereotype Supt. Lee Moorman have recently developed an automatic means for casting plates on the Junior Autoplate Machines in use in that plant. The air cylinder operating device replaces pulling down the pump lever manually. In this way, the casting stroke of the pump lever is exactly alike in every instance. The device does two things: (1) Provides uniform pour of the metal into the casting box, and (2) Lessens the labor attendant upon operation of the lever manually.

Mr. Rindsberg explained that the device has been in operation for over three months in the *Enquirer* stereotype department. Three more air cylinders are now being applied to other Junior Autoplates.

Mr. Rindsberg states the *Enquirer* will be glad to furnish detailed drawings for installation at nominal cost.

In the left-hand picture above the air cylinder, the piston of which operates the pump lever, is shown ready for the casting stroke. The operator has his hand in position on the control valve.

In the right-hand picture, the air piston has depressed the pump lever and the pour has been completed. Another movement of the control valve by the operator and the picton rod will return to its normal position raising with it the pump lever.

Slur and other evils eliminated in newspaper pressroom by packing with thinner gauge blankets.

By E. R. WEISKITTEL*

**Pressroom Superintendent, Youngstown, (O.)* Vindicator.

QUITE a lot of talk concerning newspaper first impression printing and what to do about it took place at the recent ANPA Convention in Pittsburgh. This topic has been discussed at almost every mechanical conference but no direct attack has been made to overcome the so-called troubles such as show-through and slur.

In the writer's opinion, "show-through" is not a press problem. It is entirely a matter for the paper makers and the publishers. The paper makers can make a sheet of paper that will not "show through" but not at the speed necessary to meet the demands of the publishers for more paper. The speed of the paper machine determines to a great extent the formation of the sheet. This was proved when the 30 lb. paper was used. The machine was slowed down about six or seven percent and the cost for loss of production was charged to the customer. If the mills get the necessary equipment to meet production demands then it may be possible to get a sheet of newsprint that will not "show-through."

"Slur" on the first impression is quite another problem and should never be confused with "show-through". "Slur" is caused by ink on the printed first impression being deposited on the second impression blanket and then the second impression plate blots the ink onto the first impression printed page. This condition is more noticeable at times than others. There must be a reason for this. Of course, one of the worst offenders that causes "slur" is the paper—uneven winding, roll out of round, hard surface on sheet, and so on. These we know cause "slur" and offset on the first impression, but, what has been done to overcome this fault in the pressroom?

The writer was asked to express his opinions about blankets at the 1942 ANPA Convention in Chicago. (*Mechanical Bulletin* No. 28, page 141) I quote in part:

> I am going to make a statement with which, perhaps, many of you will not agree. I say that, before many years you are all going to agree with it. It is that we are afraid to pack our presses the way they should be packed. The majority of men here, I believe, will agree they are packing their presses to around 0.166 in. or better. The majority of them who are having trouble are packing to 0.170 in., 0.172. and 0.174 in. I say to you gentlemen now that the sooner you all learn to pack your cylinders close to the pitch line the less trouble you will have.

That statement was made four years ago and it was only recently that we had the nerve to pack our cylinders as close to pitch line as possible and still get the amount of impression necessary to print with.

Today we are packing our Goss High Speed Anti-Friction Press with just 0.014 in. of blanket over the diameter of the plate cylinder. Our plates are standard 0.4375 in. gauge.

We believe we have definitely improved our first impression printing and it remains to be seen just how much use we will get from these blankets.

We have experimented for the past five years with different blanket gauges and the result obtained has proved that the lesser amount of blanket used the longer its life.

Going back a few years, we should remember the spongy coated-felt blankets that required running in over a period of weeks before we would be printing as we should. It was necessary in those days to overpack enough to allow for go-down or ironing-out so that we could get the

blankets compressed to the thickness required to print a clean, sharp paper.

We can all recall how pressmen would say: "Wait a month or two and then see how these blankets print." Today that is not necessary as we can purchase blankets already compressed and ironed out which enables us to start much closer to the pitch line than formerly.

It is a mistaken idea among pressmen to believe that the greater amount of overpack the longer the life of the blankets. The reverse is true as the following explanation should prove.

If the blanket cylinder is overpacked 0.028 in. greater than the plate cylinder with a standard 0.4375 in. plate, the blankets roll or bulge ahead of the plates and cause a pushing and stretching effect. This crowding of the blankets ahead of the plate is due to the larger blanket cylinder and smaller plate cylinder "trying to equalize themselves" to the same diameter.

The pressman then pulls the excess blanket into the opening of the cylinder and adds impression. This immediately creates the above-mentioned condition all over again. This goes on until the blankets have been rolled and mauled sufficiently so that the blanket cylinder diameter is the same as the plate cylinder at the point of impression or pitch line.

Then the pressman will say, "Now we are really printing. But the face is all gone, so we will have to change blankets."

With the modern blankets available today why not use only enough blanket thickness to increase the diameter of the blanket cylinder to the same diameter as the plate cylinder and add just enough excess gauge to take care of 0.013 in. or 0.014 in. impression needed to print with and allow for a slight go-down? This will keep the sheets or webs within the limits of gain provided to make a smooth-running press.

At no time during the life of blankets, regardless of the excess gauge, is it necessary or possible to use more than just enough impression to print with, say 0.012 in. or 0.013 in. Using more than this lowers the quality of the printing.

Therefore, if a modern blanket is used on a Goss press the gauge should never be over 0.166 in. which is 0.018 in. over the plate cylinder, and 0.143 in. on other presses. This amount of overpack should be reduced according to the density of the blankets to the minimum. (We are using 0.014 in. overpack or a total of 0.162 in.). If this is done, the excess pull mentioned above will be eliminated entirely and the stretch and thinning-out of the blankets will be negligible. The life of the blankets will be increased because they have not been twisted and torn during the ironing-out process.

To overcome the density of the modern blanket some pressmen have increased the thickness of the plate. While this overcomes some of the evils of overpacking it also creates new ones, such as gears not running on pitch line due to having widened the space between the two cylinders.

"Slurs" on first impression on account of overfeed of the web and poor running of the combined webs to the folder will be encountered because the gains throughout the press were made to accommodate less cylinder feed.

This may all sound a little far fetched but under running conditions over a period of five years these facts have been proved in our own plant.

Some of the benefits resulting from use of the thinner gauge blankets are as follows:

(1) Cleaner and sharper printing, especially on first impression.
(2) Less trouble starting new blankets.
(3) Plates wear longer.
(4) Better running of the press when new blankets are put on.
(5) Pulling of blankets into the slot practically eliminated.
(6) Much longer life from blankets.
(7) Resetting impression kept to a minimum.
(8) Blankets remain resilient and face intact after long usage because the life has not been pounded from them.
(9) Heads and tails of blankets do not beat down.
(10) Uneven stereo plates print better because the blanket remains resilient.
(11) "Winders" caused by loose blankets eliminated.
(12) "Slur" eliminated because the bulge ahead of the plate is kept to a minimum.
(13) Cylinder "jump" eliminated.

Modified Dog Prevents Blank Papers

By G. M. BUUR*

**Mechanical Superintendent, R. W. Ernest Printing, Los Angeles, Calif.*

LIKE other printing executives, the writer and his associates have been newsprint conservation - conscious ever since war conditions have created a scarcity of print paper. To help conserve newsprint, and to overcome failure of the human element to function in every case, we have modified the design of a ductor roller disengagement dog on our Duplex Standard Tubular press.

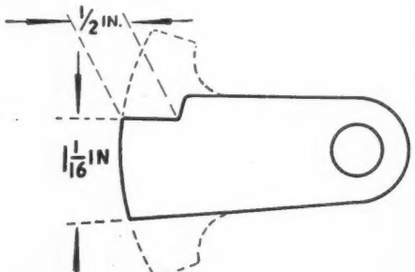


Fig. 1—Diagram showing outline of ductor roller disengagement dog for Duplex Standard Tubular press. By cutting the "ears" from the dog to the measurement indicated in this figure, dropping of the dog to permit normal operation of the ductor roller at the commencement of a press run is made automatic.

On the press, as mentioned above, there is a little dog (see Fig. 1) which must be flipped over manually to keep the ductor rollers from getting flat while the press is not in use. In the past, and in spite of all precaution, there seems to be a mysterious element even in the best operated pressrooms, that causes this dog to be forgotten before a run. Because of the failure of disengagement of the dog, there may be quite a few hundred spoils at the commencement of a run.

As is well known, when the ductor roller is to be raised at the end of a run, the curved face of the dog contacts the roller shaft and holds it away from contact with the ink drum or the vibrators. By altering the dog as shown in the accompanying diagram, the dropping of the dog is made automatic when the press is started. What takes place at this time is simply that when the high surface of the ductor roller operating cam raises the ductor roller, the dog drops down on the press frame out of engagement with the roller shaft. After the press run is completed, it still is necessary to raise the ductor roller by hand and place the dog under it to keep the rollers from becoming flat.

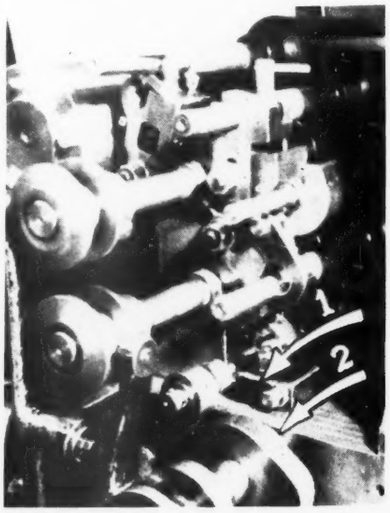


Fig. 2—Halftone illustration of section of press in plant of R. W. Ernest Printing, Los Angeles, Calif. The dog *1* is caused to drop automatically when the high point of operating cam *2* raises the ductor roller. In this way several hundred spoiled copies of papers are avoided. With the unmodified dog, the spoilage is caused when press operator neglects to flip the dog out of engagement with the ductor roller shaft at the start of a run.

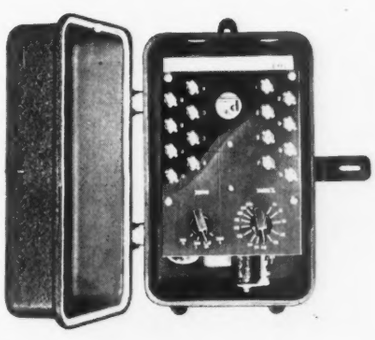
Improvements in machinery for converting wood pulp and other materials into paper have a counterpart in the development of equipment for handling all such materials and finished products. For example, low-lift platform truck here shown transporting a load of ground wood pulp, which has been pressed while wet and folded to form "laps", moves up to 4000 lbs. in much less time than a worker by manual means conveys one-tenth of that quantity. The wage differential for the common laborer, or manual worker, and that of the power truck operator is comparatively small and all other cost factors also are decidedly in favor of the use of power equipment in plant and inter-plant transportation. Photo Elwell-Parker Electric Co.

Equipment and Supplies

Photoswitch Electronic Timer

PHOTOSWITCH Electronic Timer, Type 30HL1, is an automatic timer for intervals from 1/20 sec. to 4 min. It is recommended for process control and machine timing when long-life, repeat-cycle operation, or precise accuracy is a prerequisite. This timer is used to control equipment operations of many kinds where time intervals are necessary.

Type 30HL1, provides four basic types of timing: Interval, delayed action, automatic repeat, and programming, as well as many variations of these four fundamental types. All of these timing combinations are incorporated in this one timer and may be utilized by changing external connections to the terminal board. In addition, a maximum time interval selector switch provides for 5 time intervals. Thus Type 30HL1 is capable of timing for any interval between 1/20 sec. and 4 min. with an accuracy variation of less than 2%.



View of Photoswitch Electronic Timer. Automatic in action from 1/20 sec. to 4 min.

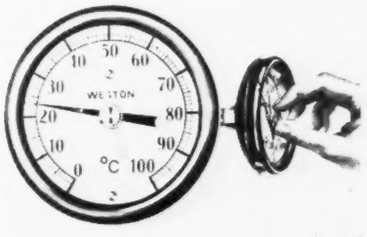
Electrical circuit features of Photoswitch Type 30HL1 Timer are as follows: Foremost of these is the extreme flexibility of the whole unit which is obtained by bringing out many points of the circuit to terminals on the front panel. The basic circuit has been designed so it is self-compensating for changes in line voltage. For this reason, accuracy does not change from day to day, nor will replacement of the vacuum tube alter the original 2% limit of accuracy variation. Either 115 v. or 230 v. supply line may be used. Even low line voltages do not affect the timer's operation. Although the Type 30HL1 Timer offers wide flexibility, it employs one tube and one relay.

Inkmaster Typographic Rollers

AN informative bulletin has been published by Ideal Roller & Mfg. Co. The bulletin is entitled *Ideal Inkmaster Typographic Rollers*. Besides the original use for which these rollers were designed, it is stated in the bulletin that Inkmaster rollers may be used as form rollers with rubber plates; as form and distributor rollers with waterbase inks where there are no rules and the work is large block or solids; with Scherer Ink Rollup process in photo-engraving; for photo-engraving hand rollers and on Vandercook proof presses; as oil wips rollers on multi-color presses in place of traveling tympan to prevent offset. Detailed instructions are also given for proper care of these rollers in the pressroom.

Max-Min Thermometer

An all-metal thermometer known as the Max-Min, which indicates the maximum or minimum temperatures reached,



Views of Weston Max-Min thermometer showing dial face and pointer setting knob.

has been introduced by the Weston Electrical Instrument Corp.

The new Max-Min, has an auxiliary red index which is manually set by a finger knob protruding from the center of the scale glass (as illustrated).

When a record of the lowest temperature reached is desired, this index is placed to the low side of the temperature pointer. The pointer will move the index to the lowest temperature reached during any operating period, and the index will remain at that low point until manually re-set. For a record of the highest tem-

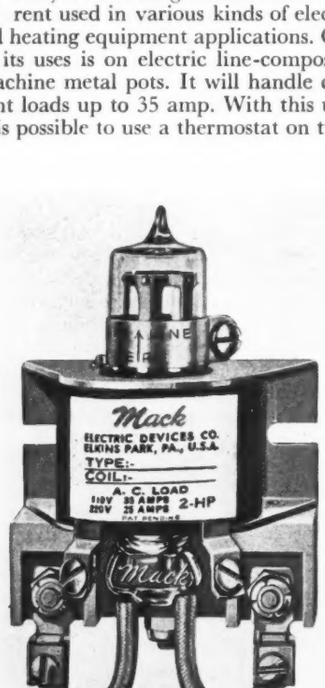
perature reached, the index is simply set at the high side of the pointer.

This thermometer is now available in two models, 221M and 222M, with scale diameters of 3 and 5 in. respectively, or, in stem lengths from 2½ to 48 in.

It is claimed this thermometer fills the need for a low-cost device which will provide an accurate record of high or low temperatures, such as on transformers, ovens, chemical equipment, etc., as well as in many processing operations throughout industry. Complete information is available from Weston Instrument Co. or *Printing Equipment Engineer* will forward your request.

Mack Mercu-Trol

THE Mack Mercu-Trol is an electrical relay for throwing off and on the current used in various kinds of electrical heating equipment applications. One of its uses is on electric line-composing machine metal pots. It will handle current loads up to 35 amp. With this unit it is possible to use a thermostat on two-wire control since the relay is designed to take frequent operation without burning of the contacts and in turn provides close temperature control.



View of Mercu-Trol Electrical Relay which, manufacturer states, will operate on any type metal electric heat unit.

The tungsten contacts are hermetically sealed in a heavy glass enclosure, Mercury-to-mercury make-and-break in inert gas. There is one moving part—a positive, free floating magnetic plunger with silent operation. The coil and load terminals are readily accessible on all installations.

Capacities—Motor loads up to 2 h.p., 110 v. or 220 v. a.c. Current loads up to 35 amps., 110 v; 25 amps., 220 v., a.c.

Further information may be obtained from Mack Electric Devices Co., direct, or *Printing Equipment Engineer* will be glad to pass along your request.

View of Dornbrock Circle-Cutting Machine in actual operation. Cuts circles from stereo flay-casts up to 15 in. diam. Other patterns also may be produced. For advertising and display composition.

Circle Cutting Machine

THE Dornbrock Circle Cutting Machine, recently announced by the Circle-Cutting Machine Co., is used for cutting circles from flat stereotype casts. With this machine, many sizes and shapes may be cut for use in advertising composition and for enclosing featured sales items and/or prices. Circles, combination circles, cloverleaf designs, heart shapes, and the like up to 15 in. diam. may be produced according to the ingenuity of the operator in the stereotype department.

Manufacturer states any size circle can be cut on this machine in 2 min. or less. Patterns may be cut from stereo cast shell (0.152 in. thick, or zinc-high (0.064 in. thickness) bearing black or benday printing surfaces can be used.

Dimensions of the machine are 24 in. by 24 in. at the base and it is 21 in. in height. Furnished with motor and six cutting tools.

DoAll Zephyr Stereotype Sawing Machine

THE DoAll Zephyr High-Speed Sawing Machine Model Z16, has been developed especially for cutting stereotype shell and type high casts, in addition to wood, plastics and certain metals, states The DoAll Co. The machine is furnished complete ready for operation.

The cutting tool used on the machine is a DoAll Buttress blade fabricated with coarse tooth clearance which produces a clean and smooth separation of the metal. The blade can be operated at from 1000 to 5000 f.p.m. according to the nature of the work but usually is run at 2500 to

View of work table and top section of DoAll Zephyr stereotype metal cutting machine. Shell or type-high casts may be cut on the Z16 Model. Special buttress band saw blade with coarse tooth clearance is provided. Saw Kerf is 1/32 in. wide. In mortising work, saw cuts squarely up to the corner without undercutting.

3000 f.p.m. for stereotype cutting work. A 2 h.p. motor drives the saw blade. Infinite variable speeds are attained through a DoAll Variable Speed Unit.

The work height on the table is 10 in. with 16 in. throat clearance. Height of the machine is 75 in. and floor space it takes is 37 in. by 41 in. As will be seen in the illustration, an adjustable nozzle can be directed to blow away all metal chips, thus keeping the operator's view of the immediate work area visible at all times. An air pump within the machine supplies the compressed air for this purpose.

Also available are accessories such as the DoAll built-in butt welder for joining saw blades, tilting table, angle saw guides, bevel rip fence, cut-off attachment and disk cutting attachment.

Base Lock Rubber Type System

A NEW rubber type stamping method has been announced by Wm. A. Force & Co. The user is enabled to compose different faces and different bodies of rubber type in the same line with alignment at the top or bottom.

The rubber type is cast in one piece to standard height. The base is cast from rubber in one piece. Any length, width or shape can be made. The base can be mounted flat or curved. In this base all type sizes can be inserted.

Type is locked in the base by finger pressure. The base will hold the type firmly in position. Manufacturer states

Base Lock Rubber Type for stamping purposes is shown here in holder. Tongues on type fit into grooves in holder permitting top or bottom alignment of different sizes for regular rubber stamp work and for price cards.

the rubber cushion under the base assures all-over impressions.

Features claimed for the Base Lock Rubber Type are: (1) Any size type can be used with any other; (2) Space between type lines can be varied with several type sizes used at once if desired; (3) Type always lies flat thus giving uniform impression; (4) No spaces are necessary and (5) Rubber type can be used as a hand stamp or mounted on special bases for hand printing or automatic machines for code dating, imprinting, etc.

Type holders are available in any size or shape. Holder will support any size type. For example, a holder made to take 1 in. high type will accommodate any size type listed. It will take three lines of ¼ in. type, or two lines of ½ in. type. Special holders can be made in any size or form for imprints on flat, concave, convex or cylindrical surfaces. Type of various sizes is supplied in fonts.

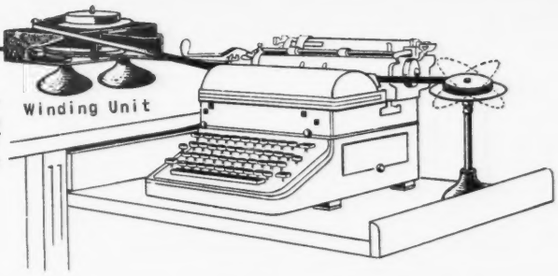


Diagram shows how Planographers' Rig & Reel is applied to any make of typewriter. Uses one-time carbon paper ribbon.

Planographers' Rig & Reel

THE improved Planographers' Rig & Reel is a separate device for performing the usual functions of the ribbon on any make of typewriter—manual or electric. It consists of a separate ribbon spool stand and a winding unit. Any make, width or length of one-time paper ribbon is used. It can be used on a typewriter for preparing catalogs, folders, direct image plates for letters, masters for Hectograph gelatin machines and matched fill-ins on circular letters in making plates for Multiliths, Davidsons, Webendorfer or Harris presses.

The device may be attached or detached or switched from one typewriter to another. It works from either right or left side of typewriter. Manufacturer states typewriter must be in good condition with a hard platen and no type characters off their feet. Can be used on any style desk.

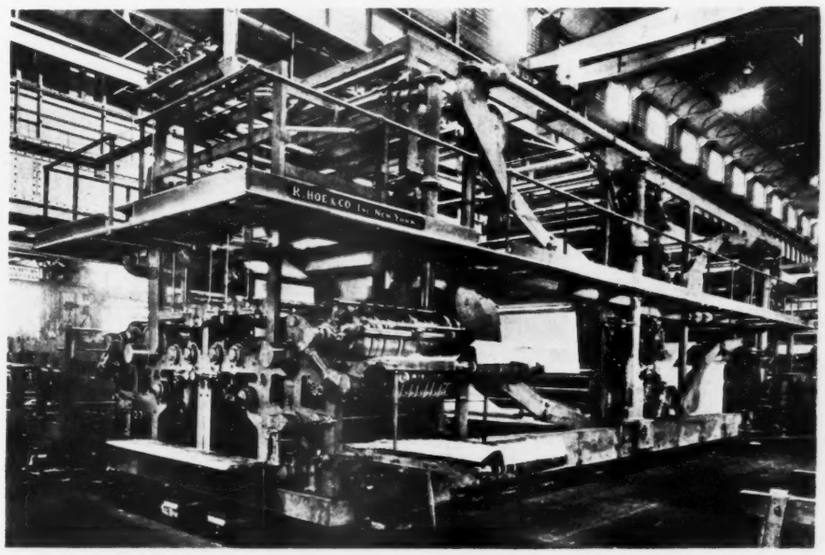
Further information is available from Planographers Rig & Reel Co., direct, or through *Printing Equipment Engineer*.

Electronic Tachometer

AN electronic tachometer designed for measuring rotating speeds from 300 to 50,000 rpm has been announced by the Special Products Div. of the General Electric Co. Weighing 19 lb., the new tachometer is useful for the production testing of equipment instantaneously without the necessity for any permanent attachments. It can be used to indicate the speeds of electric motors, machine tools, pumps, fans, blowers and other types of rotating equipment.

The electronic tachometer consists of a small pick-up head, six feet of flexible cable, and a measuring unit with a panel-mounted indicating instrument reading directly in rpm. Either a low-speed or high-speed head can be used with the instrument. The low-speed head provides five speed ranges, 0-1000, 0-2000, 0-5000, 0-10,000, and 0-20,000 rpm, while the high-speed head provides three speed ranges, 0-10,000, 0-20,000, and 0-50,000 rpm.

Each pick-up head consists of a light-interrupting disk and a phototube. Light shining upon the phototube through the openings in the rotating disk produces input signals which are then transferred to the measuring unit, which indicates the rpm of the equipment being tested. The shaft to which the disk is attached rotates on ball bearings and requires very little torque, and therefore the speed of the equipment being measured is not reduced by use of the tachometer.



Six carloads containing the first presses of a battery of magazine printing presses built by R. Hoe & Co., Inc., for R. R. Donnelley & Sons Company of Chicago, cleared the siding at the Hoe plant in New York, N. Y., the week of August 19. According to Arthur Dressel, Hoe's Vice President and General Sales Manager, the presses were planned and designed during the war in accordance with Donnelley specifications and are the first post-war design presses to be built by Hoe since V-J Day.

Two Steps Which Can Be Taken by Plants Operating Offset Equipment

TWO steps every plant operating lithographic equipment can take now to help keep up production quality, reasonable profits, and customer satisfaction despite the increased cost of materials, labor and overhead and the shortage of highly skilled craftsmen are:
1. Upgrade skilled craftsmen by in-plant or cooperative training programs with LTF texts, manuals, courses or by sending men to one of the five organized and equipped trade schools offering training supplementary to on-the-job training for apprentices, equivalent or above, using LTF texts, courses, manuals and materials.

(Write for full details including how to use LTF course outlines to have programs properly certified, list of tools and equipment for each course for which the Veterans' Administration pays, curricula, list of supplies and chemicals needed for each course.)

2. Invest in the research work being expedited at the LTF laboratories in association with the Armour Research Foundation to take advantage of recent scientific developments to improve tone and color control and correction methods with reduction of handwork, makeovers, wastes, variables,—to standardize plate metals and provide means of specifying more uniform grains—to improve coatings, fountain solutions, etches, etc.

Increase the amount of your sustaining or annual dues memberships and see that every key man in your plant is a $10 member.

Study the articles in the trade press regarding LTF activities. Read carefully and respond to the letters you have received or will receive from the President and Executive Director of your scientific, research and educational institution in the next few weeks.

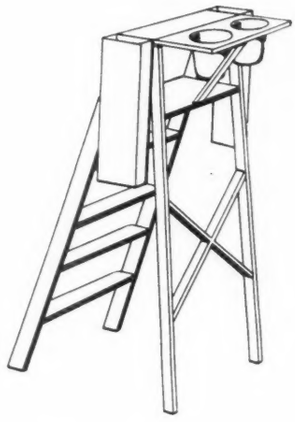
For further information, write to

The Lithographic Technical Foundation,
131 East 39th Street,
New York 16, N. Y.

Lighting Maintenance Ladder

TO maintain high lighting levels of small fluorescent installations, engineers of Sylvania Electric Products Inc., have developed this all purpose maintenance ladder, which is easy and inexpensive to build. By the addition of sheet metal or wood racks to any ladder, spaces are provided for burned out lamps, new lamps, starters, cleaning cloths and two buckets, one for the cleaning solution and the other for rinse water.

A systematic plan of fluorescent maintenance insures continuous peak performance of fluorescent lamps and fixtures with minimum dimunition of light output. In one installation studied by Sylvania Electric, accumulated dirt and dust on lamps and reflectors caused a 27% light loss. The frequency of cleaning is dependent on locality and dirt in



the atmosphere. When fixtures are providing one quarter to one third less light than the designed output, it is time for a soap and water application.

The cleaning agent to be used depends on the type of reflecting surface. Reflectors which are only a slightly dirty can be rubbed with a damp cloth, but to remove hardened dirt on a porcelain enamel surface, an efficient and concentrated "soapless" soap will do a thorough job with minimum amount of effort and leave the surface clean. Synthetic enamel surfaces require a green soap solution briskly applied. On an aluminum reflector, the solution must be as neutral as possible since mild alkalinity or acidity will destroy the reflectivity of the metal finish. A green soap solution or one of the special wax or wax emulsion cleaners which have been specifically developed for cleaning aluminum are recommended. Glass surfaces of lamps and diffusers are best cleaned with trisodium phosphate, and no rinsing is necessary.

Color Strength

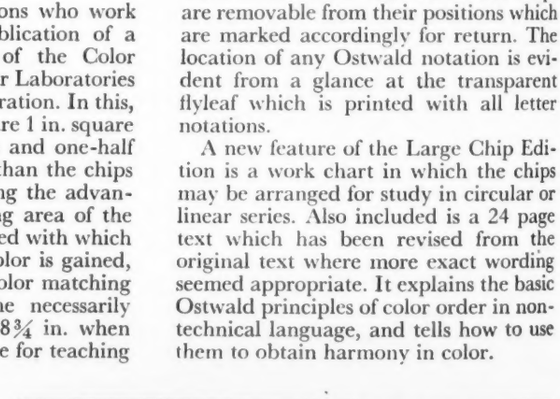
IN LETTERPRESS, increased speed generally means that thinner ink films have to be used and that in turn means inks of higher color strength have to be used to counteract the effect of the thinner films. This may be provided for by using toners.

Color Harmony Manual

OF INTEREST to persons who work with color is the publication of a Large Chip Edition of the Color Harmony Manual by Color Laboratories Division, Container Corporation. In this, the individual color chips are 1 in. square plus a tab, providing two and one-half times more working area than the chips in the 1942 edition. Among the advantages of the larger working area of the chips are the increased speed with which a visual impression of a color is gained, and the ease with which color matching is accomplished. Also, the necessarily larger charts (11 in. by 18¾ in. when open) are more appropriate for teaching and for presenting color schemes before groups of people.

The shape of each chip provides a tab on which is printed the complete Ostwald notation for that color. All chips are removable from their positions which are marked accordingly for return. The location of any Ostwald notation is evident from a glance at the transparent flyleaf which is printed with all letter notations.

A new feature of the Large Chip Edition is a work chart in which the chips may be arranged for study in circular or linear series. Also included is a 24 page text which has been revised from the original text where more exact wording seemed appropriate. It explains the basic Ostwald principles of color order in non-technical language, and tells how to use them to obtain harmony in color.



Large Chip Edition of Color Harmony Manual consists of 12 handbooks containing 680 movable color chips, work chart, removable gray scale holder, 24 page illustrated text and buckram covered box. Work chart (foreground) permits arrangement of circular or linear series of chips.

LETTERPRESS • OFFSET-LITH • GRAVURE ADVANTAGES AND DISADVANTAGES EACH HAVE IN SPECIALTY FIELDS

Analysis *of printing processes for use by specialty paper converter*

By R. P. WILLARD*

**Development Engineer, Moore Business Forms, Inc., Elmira, New York*

A LARGE PORTION of the printed specialties, which are mass produced, are manufactured on machines of special design. Labels, wrappers, printed tape, business forms, bags, tickets, and countless other paper products are converted at lowest cost on special equipment which not only prints, but performs many finishing operations as well.

In building machines of this nature, the Development Engineer must select the printing process which will be best suited to the work being turned out. For a number of years we have witnessed controversy between the advocates of letterpress, offset, and to some extent gravure, as to the "best" process. From the standpoint of the specialty press builder this argument is absurd. Each of these processes has certain advantages and disadvantages. Each is capable of doing excellent work and each should be carefully considered in the light of the desired results. There is no all around "best" process.

In selecting a printing method for the specialty machine, there are five major factors which must be considered. These are:

a. The stock to be run.
b. The specifications of the product, including quality desired.
c. The length of run on each order.
d. The percentage of repeat orders.
e. Auxiliary equipment necessary.

Considering the Processes

The problem of the Development Engineer is to select that process which will, in view of the factors listed above, result in the most efficient production method. He must also consider the cost of plates, initial cost of the machine and maintenance, wastage of stock, skill of the operating staff, speed of operation, makeready time, and all other factors which will influence the profit sheet.

As a general rule, on mass production work there are three major processes to choose from:

a. Letterpress, either oil ink or aniline printing from
   1. Stereotype plates
   2. Rubber plates and plastic plates
   3. Electrotypes
   4. Engraved cylinders
b. Offset printing with
   1. Albumen plates
   2. Deep etch plates
c. Gravure printing

Each of these processes must be studied with respect to the five factors specified by the customer.

The Process and the Stock

Let us consider the factor of stock to be printed upon. The greater percentage of converters used either paper, board or cellophane as their raw material and this article is restricted to a consideration of these three items.

Letterpress printing is suitable for use on all of these materials, and especially on all types of paper and board, including newsprint. Although letterpress printing has been done on cellophane with metal plates and oil inks, it should be recognized that cellophane does not have the absorptive powers of paper, and serious drying problems may be encountered at high speeds, unless special inks which set by polymerization, oxidation or freezing are utilized. If the quality of work is not too great, it is advisable to give serious consideration to the use of aniline inks and rubber plates on cellophane. These inks designed to stick to cellophane, and setting by the evaporation of low boiling solvents are quite suitable for high speed work.

Offset printing may be chosen for use on paper and board, and is suitable for a great variety of surfaces. However, considerable difficulty is encountered if this process is used on newsprint, or other stock where the "pick" is low, due to the lint and paper fibres working back into the ink distribution system. On work of a cheap nature the cost of paper with a sufficiently high "pick" factor often precludes the selection of this process. The characteristics of the inks used for offset work tend to prohibit their use on a non-absorptive surface such as cellophane. It is true that they are used in tin plate work, but in that case the drying is usually effected by maintaining the plate at a temperature of about 250 deg. F. for 15 or 20 min.

Gravure printing is suitable for high quality work on a great variety of papers and boards. Drying takes place by a combination of penetration and evaporation. Because volatile solvents are used, very high speed can be obtained with proper drying equipment. Whereas aniline printing with rubber plates is satisfactory for the cheaper classes of cellophane printing, gravure is capable of producing a much higher quality product on this material.

Considering Specialty Presses

The second factor which the specialty press builder must consider is the specifications and quality of the work to be run. From the standpoint of the designer, the least expensive, and most efficient machine is one which operates continuously on one size and style of product rather than on a variety of sizes and styles.

As a general rule, the fastest specialty machines are web-fed rotaries, and it is usually advantageous, where finishing operations are combined with the press, to do the printing before the sheet is severed from the web. This permits better control of the web during the subsequent operations, in addition to a simpler machine.

If, however, the customer specifies that the unit shall be capable of accommodating a wide variety of sheet lengths, the problem is sometimes a difficult one on a web press. Unless the specified sheet lengths are a division of the printing cylinder circumference, it is necessary to utilize interchangeable printing cylinders of various diameters.

Interchangeable Cylinders

Any of the printing presses can be built to utilize interchangeable cylinders, but more difficulty is encountered with some than with others. Especially if the cylinder size must be changed frequently, it is important that this can be done with a minimum of effort. Some of the major problems encountered in the design of interchangeable cylinder units are discussed below.

Letterpress printing machines utilizing metal plates such as stereotypes and

electrotypes have been made with interchangeable printing cylinders. This type of construction is however rather expensive, especially if many sizes of cylinders are required. Plate cylinders for stereotypes and electrotypes are often made rather elaborately because they must have some means of holding the plates on their surface. Impression cylinders for this type of work are generally built with a gap at some point in their circumference for the packing reel rods or anchor bars. This style of impression cylinder necessitates that it be changed each time the plate cylinder is changed, otherwise a hunting condition will exist between the cylinders. A further factor to consider is that the ink form rolls must be adjustable to accommodate various plate cylinder circumferences. This is not too difficult a problem if not more than two form rolls are used, but it is sometimes troublesome to use three or more form rolls on an adjustable cylinder press. The reader can readily appreciate the fact that with all of the major printing components positioned on adjustable, rather than fixed bearings, the rigidity of the machine may not be all that could be desired, unless the design is very carefully worked out.

Some converters using interchangeable stereotype or electrotype plate cylinders, and especially engraved cylinders, do not remove the impression cylinder when changing sizes, but prefer to print upon an impression cylinder coated with solid rubber. This cylinder having no gap does not have to be equal in diameter to the plate cylinder. Naturally, work produced on this type of unit with very little opportunity for makeready is not of high quality unless the plates are quite accurate. Excellent work can be done, however, with precisely made engraved plates in the form of sleeves which are slipped on over the plate cylinder shaft.

Aniline printing with rubber plates is a practical method to use in conjunction with interchangeable printing cylinders. These machines are built with a steel impression cylinder having a ground surface and no gap. It is therefore not necessary to alter this cylinder when making changes. As a general rule the rubber plates are fastened by adhesives directly to the plate cylinders, thus eliminating any need for plate clamping devices, and reducing cylinder costs to a minimum. In fact, the cost of many of these plate cylinders is low enough to permit operators to leave their plates on the cylinders and store them for repeat orders. A further consideration of the aniline press is that it usually has one ink form roll, and adjustment can be made to the plate by racking the fountain forward or back. The simplicity of design of this type of unit makes it appealing to the converter producing printing of ordinary quality.

Offset presses are not generally considered adaptable to the use of variable size printing cylinders, as the extra complication of an adjustable water fountain and blanket cylinder tends to create a machine of some complexity.

Gravure printing is especially suitable for use with plate cylinders of varying sizes. A hard rubber surfaced impression cylinder is used with no gap, and there are usually no form rolls to contend with, although the doctor blade must be adjustable through the size range required.

Other Factors Influencing Choice of Process

The third and fourth factors which influence the choice of a printing process for the specialty paper convertor are the average length of order, and the percentage of repeat orders or re-runs.

It is quite evident that plates prepared by the different processes have a considerable variation in the average number of impressions which can be secured, as well as in their cost of manufacture. In addition, the makeready time required on the press in preparation for actual printing varies greatly with the process. This cost while chargeable to the pressroom can logically be treated as a part of the plate cost.

The problem, therefore, is to select that particular process which will produce work of adequate quality, and at the same time result in the lowest plate cost per unit of product on runs of the average length sold by the manufacturer.

It is not economic to make an expensive plate for a specific job and discard it when only partly worn out, because the order is completed. In some cases the

(*Continued on Page 68*)

Perfection Type Moves

Lloyd Libby, president of Perfection Type, Inc., a printing supply and trade composition house in St. Paul, Minn., has announced the purchase of a $100,000 building on Kellogg Blvd. at Cedar St.

The new building with 20,000 ft. of floor space is three times the size of the present plant. It will house a complete machine shop to repair or rebuild printing equipment.

The move to the new building was completed the first part of September.

Conference Dates

ANPA Mechanical Conference—Palmer House, Chicago, Ill., June 9, 10, 11, 1947. Worth Coutney, Chairman; Walter E. Wines, Manager, ANPA Mechanical Dept., 370 Lexington Ave., New York 17, N. Y.

Great Lakes Mechanical Conference—Hotel Claypool, Indianapolis, Ind., October 27, 28 and 29. George Fuller, President, Stereotype Supt., Cleveland *Press;* Al Oberg, Secretary, Comp. Room Supt., Flint (Mich.) *Journal.*

International Association of Printing House Craftsmen—1947 convention city to be announced later. Wm. H. Griffin, President, Griffin Bros., 447 Sansome St., San Francisco, Calif.; Secretary, Pearl E. Oldt, Central High School, Grand Rapids, Mich.

International Trade Composition Association—Frank M. Sherman, Executive Secretary, 1015 Chestnut St., Philadelphia 7, Pa.

Midwest International Stereotypers and Electrotypers Terre Haute House, Terre Haute, Ind. November 21, 22 and 23.

National Association of Photo Lithographers—Shoreham Hotel, Washington, D. C. October 3, 4 and 5. Walter Soderstrom, Executive Secretary, 1776 Broadway, New York 19, N. Y.

New England Mechanical Conference—Hotel Statler, Boston, Mass., Oct. 5 and 6. George L. Green, President, Providence (R.I.) *Journal;* Walter C. Crighton, Secretary-Treasurer, New London (Conn.) *Day.*

Northwest Mechanical Conference — Nicollet Hotel, Minneapolis, Minn. Feb. 15, 16 and 17. President, Wm. C. Brown, Mechanical Supt., Minneapolis (Minn.) *Star-Journal;* Vernon Eck, Secretary, 3725 48th Ave. S., Minneapolis 6, Minn.

Pacific Newspaper Mechanical Conference—1947 meeting at Hotel Fairmont, San Francisco, Calif. May 11, 12, 13, 1947. President Ira E. Stuck, San Francisco *Shopping News.*

PNPA Newspaper Mechanical Conference—Wm. N. Hardy, Mgr., Pennsylvania Newspaper Publishers' Assoc., 209 Telegraph Bldg., Harrisburg, Pa.

Printing Industry of America—James R. Brackett, General Manager, 719 Fifteenth St., N. W., Washington 5, D. C.

SNPA (Eastern Div.) Mechanical Conference—Walter C. Johnson, Manager SNPA, P. O. Box 1569, Chattanooga 1, Tenn. Chairman Executive Committee, I. J. Gardner, jr., Composing Room Supt., Chattanooga (Tenn.) *Times.*

SNPA (Western Division) Mechanical Conference—Galveston, Texas. February 17, 1947. Secretary, C. W. Tabb, 723 Texas Bank Bldg., Dallas, Tex. Executive Committee Chairman, F. J. Williamson, San Antonio (Tex.) *Express-News.*

THREE-COLOR PROCESS PAGE

printed in newspaper on same day picture was taken by San Francisco Call-Bulletin

MARKING a forward step in the use of color by daily newspapers, The San Francisco *Call-Bulletin* recently printed a three-color, full-page news picture of a Shrine parade within a few hours of the time the picture was taken. It is believed that this was the first time that a color separation news picture was printed by any paper in the United States on the same day the picture was taken. The Chicago *Tribune* printed color process pictures of a Sunday Easter parade—but these appeared in a Monday edition.

On the day of the big parade during the Shrine convention in San Francisco, *The Call-Bulletin* posted two of its staff photographers—Bill Nichols and Jimmy Nickell—on a photo truck at the corner of Market and Montgomery Sts. As the main units of the parade marched on to Market St. from Montgomery, the photographers snapped their shots and gave the plates to a motorcycle messenger.

The picture was taken at 10:35 in the morning, and *The Call-Bulletin* edition that rolled off the presses at 2:20 that afternoon carried, on the first page of the paper's Green Flash section, a full-page, three-color picture of the Shriners in their colorful uniforms, parading along the banner-decorated streets of San Francisco.

One-Shot Camera

The camera used for this advanced experiment was a National One-Shot Color Camera. With one shot through a single lens, this camera exposes the three filtered color separations on three individual plates. This is accomplished by a prism mechanism which filters and separates the three primary colors, as it exposes the three plates. Production of color separations in the camera does away with the necessity for making the separations in the newspaper engraving room—thus eliminating the time-consuming processes of working from transparencies, to color prints, and then to separations.

Time Schedule

The time schedule on this initial experiment by the San Francisco afternoon daily, was as follows:

Picture snapped at 10:35 a.m.; separation plates delivered to *Call-Bulletin* photo lab, 10:45; plate developing completed at 10:55; prints to engraving department, 12:45; black, yellow and red plates delivered to stereo room at 1:50 p.m. The stereotype department was all set for the plates. The first plate to run through the steam table took 10 min. The second and third went through in 7½ min. each. The last plate—a total of 18 plates were needed for the three rotary presses—was delivered to the pressroom at 2:15; and at 2:20 the plates had been registered and the presses were running at full speed.

Harry Davidson, *Call-Bulletin* Art and Picture Director, estimates that with more experience it will become routine to be printing news pictures in three colors in less than 3 hr. after the pictures are taken.

Typical of the care taken in all phases of advance planning was the experimentation on several days before the parade, with test shots at various locations along the route of march. During the experimental period, banners were put up in certain locations to provide color in the sky for better composition.

Teamwork was the important factor in the success of the color printing experiment. Among the individuals on *The Call-Bulletin* who played an important part in the achievement were the following: James Bales, Managing Editor; Harry Davidson, who had charge of technical photo and art details; staff photographers Bill Nichols and Jimmy Nickell; C. G. Hodgson, Production Manager; Lloyd Bjelland, Engraving Foreman; J. W. Fitzsimmons, Stereotype Superintendent; and Bob Clarkson, Press Room Superintendent.

This new development is not the first time The *Call-Bulletin* has pioneered in the use of color.

It was about eight years ago that this same San Francisco newspaper experimented with the use of built-in color in feature pictures. This resulted in the regular use of colored news pictures in the paper's Green Flash section every Saturday. These, of course, are produced through the application of color solids and tints to black and white prints, as differentiated from the color process pictures reproduced in the latest experiments.

Use Regular Press Units

Another *Call-Bulletin* development brought about color comics in the paper's regular daily editions. The unusual factor here is that the color is printed on the regular presses—not on special color

NEW PHOTO-ENGRAVING PLANT FOR SMALL NEWSPAPER PLANT

Compiled by Elmer Aslinger, Production Manager, Greensboro (N.C.) *News-Record*, for SNPA Newspaper Mechanical Conference, Jacksonville, Fla., September 1946.

Do you plan to install a newspaper engraving plant? If so, the following information probably will be of help to you. For the average small newspaper the cost will be approximately $5208. The following equipment is standard and is essential to the operation of the plant.

Camera, 20 in. by 24 in.	$1000.00
Screen, 18 in. by 22 in. (60 line)	275.00
Darkroom sink terbep controlled	475.00
tax	118.75
Stripping sink, 20 in. by 24 in.	275.00
tax	68.75
Stripping table	140.00
Whirler, 20 in. by 24 in.	250.00
Guillotine	155.00
Etching machine, plate, 21 in. by 22 in	740.00
Powder box	250.00
Burning in stove	140.00
Plate cooler, 22 in. by 26 in.	175.00
Ceiling safe lite	20.50
Viewing lite	20.00
Printing frame	190.00
Printing lamp, a.c. control	215.00
Router	400.00
Sinks and tables, made locally	200.00
Finishing tools, graduates, trays, etc.	100.00
	$5208.00

A larger plant will require a faster camera, at an additional cost of $3300, and a heavier router at $1400, bringing the total cost of the larger plant to approximately $9508.

presses such as those used for Sunday supplements. To introduce multiple color in the news columns of its daily editions, portable ink fountains of our own make are used.

This emphasis on the use of color is reflected in all departments of The *Call-Bulletin*. During the war, the paper regularly presented war maps in full colors. Since then, the colored map and chart technique has been utilized by The *Call-Bulletin* in such features as travel maps and interpretive color chart pages on current events.

Dead Metal—
What You Can Do to Help Relieve the Problem

MANY mechanical executives know that something is wrong with the source of supply balance of type metals. Little or no new metal is coming into the industry. New metal for use in type, slug, stereotype, electrotype and engraving form is becoming scarce. A type metal supply executive states that if the present condition continues there won't be sufficient lead, tin and copper.

It is reported that used metals are being diverted into channels other than the printing industry suppliers. It is also stated that some scrap dealers are holding unknown quantities of these metals for an increase in price.

Reverting to WPB regulations (as distasteful as they were) during war days, we believe the industry could very well help itself by voluntarily following the plan instituted by the Printing and Publishing Division whereby printing plants were asked to clean house of dead metal of all kinds. If printing plant executives would do this voluntarily and see to it that the metal is sold to printing metal suppliers at the present time, there isn't any doubt but what the collective action would be beneficial to the entire industry.

To get action, the manager or plant superintendent can delegate someone in his plant to clean out dead metal and dispose of it either to plate-making plant or one of the regular metal companies—thus keeping printing metals within the printing industry.

Technological Progress

in photo-mechanical processes summarized — Research and development work still going on

By ERNEST E. JONES*

**President, Graphic Arts Corporation of Ohio, Toledo, Ohio. Abstract of address delivered before Photo-Mechanical Processes Clinic, International Association of Printing House Craftsmen Convention, Montreal, Can., September 1946.*

THE fine precision darkroom cameras of today with copy board, lens board, lens opening, screen distance, rotating filter holders, lights (all controlled from the darkroom), vacuum film holders, automatic plate centering devices for color work and registering in colors, automatic focusing, and step and repeat backs are the answers to a camera man's dreams. The manufacturers of these items are still doing research and development for more improvements.

The camera lenses of today are clear, sharp, flat field lenses corrected for spherical and chromatic aberation, have iris diaphragms and with the new hard coatings are sharper and pick up less reflections and give a much improved reproduction. All lenses used in reproduction should be coated for best results. Plastics, new types of glass and even lenses made from steel will be great improvements over those we are now using, as they haven't changed much in the last 25 years.

Halftone Screens

We have some new halftone screens coming into use that make a line and halftone combined simply by changing filters. One of these is known as the Murphy screen invented by John W. Murphy of Detroit, Mich. This screen is made up like the standard engraved cross-line screen except that the lines, instead of being filled with an opaque substance, are filled with a magenta dye which is transparent. This screen, when used with orthofilm and a yellow filter, gives the same results as any regular halftone screen. When the screen is used without a filter, it is considerably more contrasty than the ordinary screen. When it is necessary to make a combination line and halftone negative, the halftone exposure is made with a yellow filter. After the exposure has been completed, the yellow filter is removed and a rose filter is added. The exposure made through this filter will completely eliminate all of the highlights, giving a complete combination line and halftone negative, or a perfectly highlighted negative. This screen is now in production and, no doubt, will be ready for delivery soon.

There is also another combination line and halftone screen which has been invented by the Printing Arts Research Laboratories and it is supposed to be used in making highlights or a combination of halftone and line as used in the ordinary newspaper halftone of ads or in highlight offset reproductions.

There is also the contact screen which was developed just before the war and which played a very important part in typographic reproductions. With this screen, it is possible to make some fine reproductions both direct in the camera and from continuous tone negatives or positives. It has greater contrast control, better tone values, sharper detail and textual rendition from the original copy. It is excellent for highlight, halftones and reproductions from pencil or crayon art.

Mezzograph screens are grained screens and were used quite extensively a few years ago, especially for extra colors and to prevent patterns. I believe they have a place in our reproduction processes and I think they lost their popularity due to the fact that so many operators had trouble in getting good negatives.

Among the first diaphragm controls introduced was one by Penrose and consisted of a set of 11 waterhouse stops and a set of relative exposure tables. These stops and tables were a great help in getting uniform halftone negatives. Next, of importance, came the Douthitt diaphragm control which automatically gave one the camera extension and by following the dial, on the lens, the cor rect stops were determined. This is a very good control and is in use in many plants today. I believe the Kinsler system came next which was similar and was preferred by some operators. The Johnson control and several others have added greatly to the uniformity of halftone negatives. The Newick control, which is an electrical device for changing the lens opening gradually, has been used successfully by many camera men.

All of these diaphragm controls have a common feature—a scale or indicator for accurately setting the lens opening required in photographing with screens of various rulings and at varying camera extensions. These controls are a great aid to an experienced photographer, but are not fool-proof and do not make an expert camera man out of a beginner, as much judgment of copy, light and materials must be used for good negatives. In making continuous tone negatives for color separation work, the densitometer is almost a must for correct balance of color with the various filters. There are several good ones on the market and

they all do a good job. Use them and produce much better color work.

Lights are probably one of our greatest problems in photo-mechanical reproduction. I don't believe the manufacturers of lamps have kept pace with the other developments in photography. The enclosed arcs which had glass globes, and had to be washed every day, were slow, uneven burning, and with cloudy, smoky globes did not bring out the detail in the copy. They gave a very uneven light and one had to keep changing position and adjusting them for even mediocre results.

The open flame arc has been quite an improvement, but still varies in eveness and color temperature and a lot of work must be done to even negative density. The fluorescent lights, the incandescent lights and the mercury lights are all showing progress, but still have a long way to go.

Improved Camera Lamps

I am glad to report that progress is being made on camera lamps which will correct the majority of the faults we have had with all of the other lights to date. A new lamp is being produced by the Strong Electric Co. It will have a motor controlled arc. Consequently, the light will be constant and there will not be any jumping of the arc. It will be constant and clear and will not have the yellow tail that is so frequent on the open arc light and, because of this constant arc, the ratio of ultra-violet light remains constant throughout the exposure and much greater actinic light is obtained than with the majority of lamps in use today. The average lamps that are used would require 2 k.w., 50 v. to 60 v., to produce 45 amp., while this new lamp, using 2 k.w. and approx. 25 v., would step the amperage up to 80. Consequently, one gets from two to four times the light from the same current consumption that is obtained with the present lights that are most commonly used.

Of course, the electronic light control meters are helping to overcome part of our trouble with lamps, as one can set these meters for a certain quantity of light and it automatically shuts off when the exposure has been completed. A duplicate exposure can be made and the same amount of light is assured each time regardless of the fluctuating light intensities. These meters are a must for well balanced color negatives and a big help for black and white. There are several on the market and they are all good.

Mechanical masking for color correction is one of the newer processes and in the hands of an experienced color photographer can save many hours of etching time.

Fluorescent water color paints, for use by the artist in drawings, for color reproduction are helping to save a lot of etching time for color reproductions for school books, greeting cards, labels and almost any work where the original art work can be controlled. There are also fluorescent paints and pencils for black and white reproductions. The fluorescent color process does correct for color when properly applied by the artist. Also, black and white highlight halftones as well as pencil and crayon reproductions are practically perfect facsimiles when properly handled.

The new Ektachrome color film and the Ansco color film can be processed by the photographer in his own darkroom and are more of the photo mechanical processes that will add more color to advertising; therefore more printing.

A one plate, one shot, four color camera is now available.

Photography and photo - mechanical processes are the life-blood of our industries and with all of these new creations coming into being, we are only beginning.

ITCA Meeting Largest in History of Association

THE International Trade Composition Association held its 27th annual convention at the Ambassador Hotel in Atlantic City, September 19, 20 and 21. The registration of 192 persons was the largest in the history of the organization, and may be interpreted to mean a revival of interest in Trade Compositions' cooperative activities.

The following officers were elected for the coming year: Oscar H. Hoffman of St. Louis, Mo., President; Frederick H. Lutz of Brockton, Mass., Vice President; John W. Shields of Bridgeport, Conn., Treasurer; Frank M. Sherman of Philadelphia, Pa., Secretary and Executive Director. The regional vice presidents elected were: Northeastern, William J. Scotland of Boston, Mass.; Southeastern, Everett A. Martin of Norfolk, Va.; Midwestern, O. B. Powell of Chicago, Ill.; Pacific Coast, W. H. (Bud) Griffin of San Francisco, Calif.; Canadian, James A. Howe of Toronto.

The board of directors was increased from 12 to 15 members. The additional members are J. R. Connell of Kansas City, Mo.; Thomas P. Henry, jr. of Detroit, Mich.; and William L. Bremer of Pittsburgh, Pa.; Lester A. Neumann replaced Frederick H. Lutz on the board.

On the 19th and 20th convention sessions were held in the morning and entertainment was given at "Nightcap" parties from 10 to 12 p.m., an ocean going cruise was a feature of the afternoon of the 20th. A convention session was held on the afternoon of the 21st and a dinner dance was given that evening. A. E. Giegengack, U. S. Public Printer, presided as toast master at the dinner.

The convention sessions discussed management practices, production methods, the labor situation and the standardization of type-face showings in the specimen books used in the trade.

Executive Director Frank A. Sherman, in his report as secretary of the association, outlined plans for the organization during the coming year. He reported a total membership of 196 active members in the trade and 29 associate members.

All convention sessions were well attended and enthusiasm for the prospects of broadening the activities of the organization was shown.

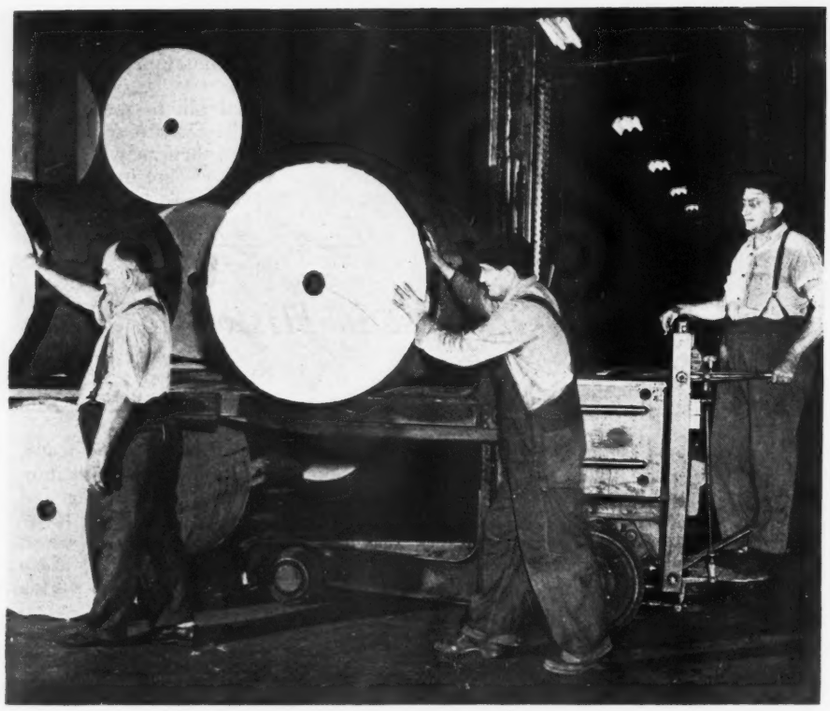
Retiring President Lester A. Neumann, who had served two terms as head of ITCA, received a handsome silver ice container with tray and accessories.

Conversion of Printing Media*

THE next item I wish to call to your attention is the proof on cellulose acetate used as a film positive for conversion of letterpress printing to offset reproduction. The trick in making the proof is to get an image in perfect register on both sides of the material. Vandercook has designed special proving presses for this sort of work which is accomplished in several ways and with different materials—bronze powder, talcum powder, and lampblack—all being employed in different processes.

This method is particularly valuable in designing and selling inexpensive advertising pieces adapted from art and illustration made for other purposes, either in a single color or in full color process. This is a field in which the Edward Stern Co. has been particularly active and which Mr. W. D. Molitor has outlined in a number of articles. I am sure other Philadelphia firms, possibly such as the Cuneo Press, are using this method in the magazine publishing field as a means of converting original letterpress printing media to offset production in another part of the country.

*From address delivered by United States Public Printer Augustus E. Giegengack before Philadelphia Club of Printing House Craftsmen, April 1946.



Tiering rolls of newsprint in pressroom basement of the Pittsburgh (Pa.) *Press* by means of a battery-powered highlift platform truck. This truck has been in service more than 19 years. Operating costs, including power, parts, maintenance and battery charges, but excluding labor charges, run less than $5 a week. Truck handles between 600 and 650 T. of newsprint in this period.

Newsprint Handling at Pittsburgh *Press*

HANDLING rolls of newsprint from receipt, into storage, thence to the presses, at the plant of the Pittsburgh (Pa.) *Press*, for the most part during the past 19½ years, has been done with the aid of two storage battery-powered, highlift platform trucks. One operates on the fourth floor paper storage room, handling incoming rolls of newsprint directly from railroad boxcars on an elevated spur track at the side of the building. The other is located in the basement of the building, in another storage area where rolls of newsprint also are received, stored and later handled for delivery to the presses.

The large rolls of newsprint received at the plant of the *Press* weigh from 1,750 to 1,800 lbs. The trucks, each of 4000-lbs. rated capacity, carry two such rolls. In addition to moving from the receiving to the storage areas and out again—distances up to 525 ft.—the rolls are elevated on the platforms and tiered three-high by the truck, being manually moved from the platform into the tiered position. By a rough estimate each roll is handled at least three times—upon receipt to storage, from storage to pressroom or to the press. The basement truck thus handles all tonnage handled by the fourth floor truck in addition to its own.

"We operate the trucks some seven hours a day, seven days a week, year in and year out," Mr. Wilson said, continuing, "I estimate that we handle 600 to 650 T. a week with the basement truck, each ton at least twice, so you can see that when I say that this truck down here has handled over a million-and-a-quarter T. in its nineteen-and-a-half years of service, I'm on the conservative side."

Questioned as to costs, Mr. Wilson said that each truck had an 18-cell storage battery, and that current to charge a battery costs between 75c and $1.00 a week. "The cost of maintaining each truck, for parts, grease and oil, battery costs, and so forth, but excluding the labor charges, haven't run over $200 a year for each truck, on the average. Let's say the total cost—excluding labor, of course, and amortization of the truck cost—would be $250 a year. This brings the cost per truck to a little less than $5 a week, and if you divide that by the number of tons that, say, the basement truck, handles in a week, you'll see then the cost of handling per ton, is less than 1c."

Since the trucks are operated a single shift of 7 hrs. a day, preventive maintenance is a comparatively easy matter, being done by mechanics at night. One night a week the batteries are checked, flushed and cleaned, and the trucks are greased, oiled and inspected. The batteries are charged directly on the truck, there being a motor generator charger in the basement with another on the fourth floor. The batteries are automatically charged, the condition being observed by gravity measurement and the amount of discharge by meters on the trucks. Once weekly a slight overcharge is given each battery. In addition to this care, Mr. Wilson said, representatives of the battery manufacturer pay regular calls of inspection.

Harris-Seybold Annual Report

Harris-Seybold Co., reports consolidated net earnings of $387,967 for the fiscal year ended June 30, 1946. Earnings were equivalent to $2.21 per share of common stock after allowance for dividends on preference stock. Sales for the year totaled $9,470,389 and included $5,695,079 in billings of completed and terminated war contracts. Sales for the previous year were $11,088,477.

During the fiscal year, regular dividends of $5.00 per share were paid on preference stock and a total of $.75 on common.

At the close of the year, consolidated balance sheet showed current assets of $6,677,307, including $2,945,451 in cash and government securities. Current liabilities totaled $2,349,270 which included advance payments of $1,011,683 by customers on unfilled orders and bank borrowings of $500,000.

Production progress is now reported to be well along and, barring unusual difficulties, current production and shipment schedules call for reaching the company's planned volume of more than double pre-war production by the end of the year.

Solder Folder Available

A NEW color bulletin describing a solder product, Tri-Core, recently developed by Alpha Metals, Inc., has been issued by that company.

The folder describes Tri-Core as a self-fluxing solder, with three cores located just beneath the outer surface of the wire. This design is to assure a continuity of flux flow.

Copies of the bulletin may be obtained from Alpha Metals, Inc., or *Printing Equipment Engineer* will pass along your request.

Modern Packaging Encyclopedia

The 1946-47 Modern Packaging Encyclopedia was published recently. Known formerly as Packaging Catalog the title has been changed this year. The Enclyclopedia covers every phase of packaging activity; design, legal considerations, materials, package parts, packages, packaging machinery and packaging techniques.

It consists of 15 chapters with sections on Cartons and Boxes; Bags, Envelopes, Packets; Labels, Seals, Tags and Marking Pieces; Cans and Tubes; Plastics in Packaging; Adhesives; and Machinery and Equipment.

Total pages 1036. Price $5 per copy.

Offset and Sheet Sticking

Abstract from address delivered by G. L. Erikson, Executive Vice President, Braden-Sutphin Ink Co., Cleveland, before convention of the International Association of Printing House Craftsmen, Montreal, Canada, September 1946.

THESE two conditions are usually related and are well known in all print shops. The spray guns and spray solutions in common use in most shops have almost eliminated these troubles. The paper man and the ink maker can also help a great deal, but perhaps we should list a few of the many things that the pressman can do to help himself when these conditions arise:

1. See that spray gun is operating properly.
2. Handle stock carefully, both in the jogger and in the pile.
3. See that sheets are falling properly into jogger and not "sliding".
4. Be sure fountain is set evenly with not too much ink. Reduce flow when possible in those areas where offset occurs.
5. Use good live rollers.
6. Set rollers properly for best distribution of ink.
7. A good make-ready is important. Do not "make-ready with ink."
8. If pressroom is too cold and damp, ink will not distribute well.
9. If pressroom is too dry, static electricity will be generated and sheets will "cling" and offset badly.
10. Use sheet heaters on press.
11. In dry weather, operate humidifiers, if available.
12. Add non-offset compound or "dopes" to ink.
13. *Don't add dryer* to stop offset. It will usually make it worse. This is No. 13 on the list and is really unlucky.

Non-offset Compounds generally work by three methods in stopping offset, most compounds using more than one principle:

1. Cause ink to penetrate:
2. Cause a wax or grease to "float" to surface of ink film.
3. Add a "grain" or "tooth" to the ink surface to hold the sheets apart.

Management
The Foreman
(in the middle)
Union Membership

PRINTING EQUIPMENT ENGINEER ordinarily does not print editorial matter bearing directly upon labor-management relations. We have from time to time, however, discussed the position of the foreman in the plant and his relationship to management and rank-and-file workers. In so many instances the foreman is regarded as somewhat of a pariah—he's neither flesh nor fowl—and in most instances this attitude is not of his making.

In most of the printing trades, the foreman belongs to the union having contractual relationship with the department he supervises. This requirement has operated more or less satisfactorily. The one remaining desirable element is that management in every case recognize the position of the foreman in plant administration.

As an example of this desirable situation we are printing below excerpts from remarks made by a management executive and a labor union official at a recent meeting in Philadelphia.

William L. Batt, president of SKF Industries, Inc., ball and roller bearing manufacturers, proposed that a meeting be held by SKF foremen and union stewards in the SKF plant. The meeting was proposed by Mr. Batt shortly after he and Clinton S. Golden, vice president of the U. S. Steelworkers of America (CIO) had worked out a new labor contract between SKF and its approx. 3000 workers.

This recognition by Mr. Batt of the vital function of the foreman is an encouraging sign that management is commencing to give attention to an important subject.

Excerpts from the remarks of Messrs. Batt and Golden are set opposite each other for comparative purposes.

Batt:

"Between us, I hope we make the same attempt to reduce friction as we have in industry through the production of ball and roller bearings. To this end, I ask the union to give its best thoughts to the manufacture of better bearings at lower cost. For, if we do not satisfy the public as producers and neighbors, the public sooner or later will turn us down. We must pledge ourselves to be one party in the success of this enterprise.

"Good relationships between union and management must be provided by the company foremen and the union stewards in the plant. The foremen know the needs of the company and the stewards know the desires of the union. Mr. Golden and I provide the atmosphere, but you must lay the solid foundation on which sound relations can be built. If when there is disagreement, the facts of each issue are made clear to each other, a fair solution usually will come about.

"Through this contract I hope our relations so steadily improve that the writing of future agreements will become a very simple affair. Let us hope that in the years to come ours will be a record of good things made and concluded and one of which we can be justly proud."

Golden:

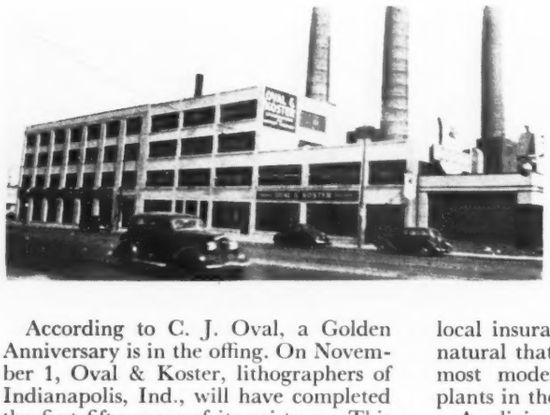
"This is an unusual and unique gathering. It is most unusual for the president of a great corporation to take the initiative in suggesting the desirability of a joint meeting of foremen and shop stewards. It is unique in the sense that it follows closely the consummation of a collective bargaining agreement and is designed to assist and encourage both parties in getting off to a good start in developing increasingly constructive and cooperative relationships.

"Gathered here tonight are two groups of key employes. On the management side is the foreman who at the actual production level symbolizes and carries the authority and executes the policies of management. On the union side is the shop steward, a key man in union organization because of his intimate contact with the organized employes and his familiarity with the union management agreement and union policies. It is appropriate, therefore, that the president of the company and a representative of the International union should jointly appear before this group . . .

to express their hopes and earnest desire that this event will mark the beginning of a new era in union and management relationships.

"The stockholders, the management, nor the workers alone and by themselves can operate the works. It is only when all three groups join together their resources—financial, managerial, technical and production skills and know how—that raw and semi-finished materials are transformed into useful products that fill human needs and requirement. It is through the continuing efficient production and sale of these products at fair prices that all of us can be assured of regular employment at good wages and salaries."

Oval and Koster Golden Anniversary



View of the Oval & Koster plant in Indianapolis, Ind. The firm is celebrating its golden anniversary this year.

According to C. J. Oval, a Golden Anniversary is in the offing. On November 1, Oval & Koster, lithographers of Indianapolis, Ind., will have completed the first fifty years of its existence. This firm began a modest business on November 1, 1896, and since that date have continued under the same ownership and management. Mr. Oval says that, curiously enough, the first order placed on the books was for calendars from a local insurance company, so it is quite natural that we now operate one of the most modern and complete calendar plants in the United States.

A religious fold-over calendar has met with much success, also a line of art hangers and deluxe calendar backs is carried.

Oval & Koster makes its own calendar pads, and operates a complete finishing plant.

Synthetic Rubber Resins for Inks Discussed by Research Chemist

THE possible place in the future of synthetic rubber resins for printing inks was discussed in Washington recently by Dr. R. P. Dinsmore, vice president in charge of research for the The Goodyear Tire & Rubber Co. The address was made before the National Association of Printing Ink Makers.

Dr. R. P. Dinsmore

Before the war, Dr. Dinsmore said, Goodyear produced a resin known as Pliolite, from natural rubber, which when suspended in a high-flash solvent, proved ideal for the manufacture of quick drying inks, so necessary in high speed newspaper and magazine printing.

With the rubber supply cut off during the war, his staff of research chemists went to work to develop synthetic substitutes, which were found to possess suitable properties for ink manufacture.

"Inks based on Pliolite (synthetic) are now available which will dry in seconds, yet will not set up or dry upon the applicator rolls even if it is left unused for 24 to 48 hrs.," Dr. Dinsmore continued.

"They give hard, scuff-resistant surfaces and can be made in a variety of colors and may make unnecessary the expensive drying equipment now required for the rapid printing of weekly or news periodicals," he added.

Dr. Dinsmore also stated that inks developed from Pliolites hold promise for the printing of transparent films and for silk screen printing as well as rotogravure and magazine work.

PERMANENCE AND DURABILITY OF PAPER

by M. S. Kantrowitz

THERE are two terms which are used in connection with the endurance of paper; namely, permanence and durability.

Permanence of paper may be defined as its resistance to deterioration resulting from chemical reactions caused by impurities either existing in the paper or absorbed from the surrounding air.

Durability of paper may be defined as its resistance to destruction from handling with continual usage.

Therefore, the greater degree of purity of the paper, the greater will be its permanence; and the greater the strength of the paper the greater will be its durability.

Chemical tests are applied to evaluate the permanence of paper; among these are acidity, rosin sizing content, and impurities including chlorine, iron and sulphur. Physical tests such as bursting strength and folding endurance are applied to papers for determining durability. High acidity is detrimental to the life of paper because it decomposes the paper fibers. Excessive rosin used in sizing tends to produce first yellowing and then deterioration of the paper when exposed to light.

Since deterioration of paper is also caused, to a large extent, by oxidation, permanent paper must be free from overbleached fiber stock and from impurities such as chlorine, iron and sulphur.

The permanence of paper is not alone dependent upon its chemical qualities. Storage conditions should also be considered. Disintegration is greatly intensified when paper is stored in acid atmospheres. Paper fibers are also affected by the prolonged action of light and high temperatures. It is recommended that permanent records be stored under controlled atmospheric conditions of 50% relative humidity and 70-75° Fahrenheit temperature. If means for controlling atmospheric conditions are not available, the paper should be stored under normal atmospheric conditions, free from air polluted with sulphur dioxide.—Reprinted from the September 1946 *Capital Craftsman.*

No Drug Yet For TB

By H. STUART WILLIS, M. D.*

**Interim Director, Committee on Medical Research National Tuberculosis Association.*

IN man's survey of substances for use against tuberculosis almost innumerable drugs have been tried. Prior to five years ago, every one of them was a flat failure.

The coming of streptomycin has been an interesting and promising development because it appears to modify—but cannot cure — tuberculosis favorably. This drug is under study in several places throughout the country, notably at the Mayo Clinic, Rochester, Minn.; the Saranac Laboratory, Saranac Lake, N. Y., and the National Institute of Health, Bethesda, Md. From the studies so far made on animals, streptomycin appears to give considerable protection against tuberculosis—not complete, but more than any other drug has ever given. It is not, however, a cure.

Streptomycin has been used in the treatment of several people with tuberculosis, most of whom have been helped. But the disease returns to its former state when streptomycin is withdrawn. No one has been cured by streptomycin and no proof exists that anyone will be cured. Active study of the drug by chemists and physicians proceeds in the hope that sooner or later a substance related to streptomycin will be found which will really cure.

At present, streptomycin stands out as a landmark on the road toward a cure. It is a remarkable drug which is receiving exacting care. Until the proper substance is found, however, we should continue to use all the accepted methods of treatment which, in so many cases, do great good.

And we should continue wholeheartedly to support the Seal Sale drives and all other movements to forward the campaign against tuberculosis. There will be plenty of time to relax in our efforts if and when a cure is actually here.

Graphic Arts School Promotion Program

Lee Augustine, vice president of The Printing Machinery Co., and a member of the Cincinnati Club of Printing House Craftsmen's committee working with the Graphic Arts High School, said his company had decided to pay all expenses in connection with the advertising and publicity program "to give the school its rightful place in the sun."

"The effort now being made to interest young people and GI students in some phase of the Graphic Arts industry should pay dividends to the industry as a whole in the years to come," said Mr. Augustine.

The Printing Machinery Co.'s program was planned in detail by the committee of the Cincinnati Club of Printing House Craftsmen, with Frank Mills of the Multi-Colortype Co. as chairman. The committee, working with John F. Arundel, director of vocational education of Cincinnati public schools, was assisted by an advertising agency in the preparation of advertisements and publicity stories.

Folder Available

THE Oxy-Dry Sprayer Corp. has issued a four-page illustrated folder, with color, describing the anti-offset dry-spray method. The illustrations show the equipment in place on a press, various views and a cross-section drawing indicates the principle of the anti-offset dry-spray powder device. Copies of the folder may be secured from the Oxy-Dry Sprayer Corp. or *Printing Equipment Engineer* will be glad to forward your request.

Next Five Years Promising

Speaking before the Western Newspaper Union's district managers of 12 western states at the meeting August 23, Carl Mellick, Sales Manager of Miehle Printing Press & Mfg. Co., gave his company's appraisal of the trends in printing processes and equipment. Mr. Mellick's talk gave a clear impression that in spite of many problems, which at the present seem difficult, the next five years in the printing industry are very promising. The Western Newspaper Union represents the Miehle Company in eight western states.

Lake Erie Acquires Feller

The Lake Erie Engineering Corp., Buffalo, N. Y., has taken over the Feller Engineering Co. of Pittsburgh, Pa., makers of hydraulic extrusion presses and allied lines, according to an announcement by Robert E. Dillon, President of Lake Erie. The activities of the former Pittsburgh company will be carried on by Lake Erie as its Feller Engineering Div. with K. Feller as general manager, with headquarters in the Empire Building, Pittsburgh.

Miehle Reports to Customers

THE MIEHLE PRINTING PRESS & MFG. CO. recently made a brief progress report to its customers respecting printing press production at its factory. Sales Manager C. Mellick states that for months the plant has been working day and night. A limited number of small presses have been shipped. Other presses still require a number of parts to be completed. Shortages of materials prevent volume production.

The flow of scarce materials is gradually increasing. Hope is expressed that the bottlenecks will be broken to permit press output to be increased. It is stated by Mr. Mellick that Miehle is not yet in a position to establish schedules with any real assurance of being able to meet them, and until schedules can be determined accurately, irresponsible promises won't be made. Meanwhile, if they have not already done so, Miehle representatives will call on customers soon.

Distributors for Lawson

W. G. Morgan, executive partner of Southeastern Printers Supply Co., printing machinery dealers of Atlanta, Ga. announces a selling arrangement with E. P. Lawson Co. to handle paper cutters, drill slotters and round hole drilling machines. Installations and service will be maintained by Southeastern in the following states: North and South Carolina, Georgia, Mississippi, Florida and Tennessee.

Dayco Receives Award

For the second successive year, the Dayton Rubber Manufacturing Co. has been awarded the "Oscar" for the best annual report to stockholders in the rubber industry.

The trophy was presented to A. L. Freedlander, President, at the annual award banquet held in New York, N. Y. recently.

Sponsored by the editors of *Financial World*, this year's annual competition for stockholder reports included more than 1500 entries. The report featured full-page illustrations of automatic equipment and new facilities recently put into operation at the main plant in Dayton.

Folder Issued

A folder has been published by the Lithographers National Association entitled *Lithography's Place in Printing Production*. The original purpose of the folder was to instruct working students in advertising and printing production courses. It will also be found useful to advertising production men and buyers of printing. Free copies are available for educational purposes from the Educational Dept., Lithographers National Association, 420 Lexington Ave., New York 17, N. Y.

Folder Available

THE Circle-Cutting Machine Co. has issued a four-page illustrated folder. The folder describes circles (round, heart shaped, or clover leaf) which can be made from flat cast stereotype metal, with solid or benday face.

The folder may be secured from the Circle Cutting Machine Co. or *Printing Equipment Engineer* will be glad to pass along your request.

EXECUTIVE ¶s

R. E. Wagenhals, formerly quality control engineer, has been appointed director of quality control for all Bearing Divisions of The Timken Roller Bearing Company, according to a recent announcement by company officials. He will coordinate all quality control activities involved in the manufacture of Timken bearings. Wagenhals began his career at the Timken Company in 1943 as a member of the factory engineering staff.

William J. Gorie, jr., manager of the Cleveland branch of International Printing Ink, has been elected President of

President of Cleveland Ink Makers Association, William J. Gorie, Jr.

the Cleveland Ink Makers Association, succeeding Arthur Pingree.

Other officers elected for 1946-47 are: Vice President, Sidney Langford of Sigmund-Ullman; Secretary-Treasurer, Marc Sommerschield of Forbes Ink Company.

James West, president of the Craftsman's Line-Up Table Corp., passed away recently at Newtonville, Mass. Mr. West served his apprenticeship in his native London, but in 1903 he came to New York and enrolled as student of architecture in Syracuse University. After graduation he went to Boston where he worked as a line-up man and stone hand for the Tudor Press and George H. Ellis. His inventive mind worked to find ways to eliminate the uncertainties in make-up and register. He first developed the Line-Up Table for letterpress printing. This was so successful that in 1928 he organized the Craftsman Line-Up Table Corp. Other tools he developed are a geared line-up and register table for letterpress printers for book, catalog, color register, combination forms and layout and the photolith layout table for paper, plate and negative ruling, stripping, masking and opaquing. Mr. West was well-known throughout the industry for his charming personality and his technical and inventive skill.

John Griffiths, age 64, founder of John Griffiths Co., Inc., and Griffiths Printing Press Co., Inc., of New York, N. Y. and Poughkeepsie, N. Y., died recently. Mr. Griffiths was born in England and came to the United States 42 years ago. He continued his education in New York City, where he was employed in the executive offices of R. Hoe & Co. In 1914 Mr. Griffiths became sales manager of the Duplex Printing Press Co. of Battle Creek, Mich. He was actively engaged in the development and expansion of the Duplex flat bed and tubular plate newspaper printing presses. Mr. Griffiths moved to Poughkeepsie, N. Y., in 1919 and became general manager of the Hoe Corp. In 1922 he returned to the newspaper press field and established his own business in New York City and Poughkeepsie, N. Y. He specialized in press room machinery and equipment for daily and weekly newspapers. In 1928, together with Nelson E. Funk, Mr. Griffiths organized and managed the Funk Printing Press Co. Inc., which manufactured specialty color presses for commercial printers and publishers. In addition to his own business, from 1934 to 1937 Mr. Griffiths directed the sales of the New Era Mfg. Co. Paterson, N. J. The Griffiths Printing Press Co. Inc. was organized 10 years ago to specialize in the export business. Mr. Griffiths was a member of the Episcopal Church and Masonic Lodge in Poughkeepsie. Surviving are his wife, two sons and two daughters. The John Griffiths Co. Inc. and Griffiths Printing Press Co. Inc. will be managed by John Griffiths, Jr. and Frederick R. Griffiths, both of whom have been associated with their father's business enterprises. Wesley Dammes, formerly of the Duplex Printing Press Company and the Goss Printing Press Co., will direct the sales department of John Griffiths Co. Inc., and John Vogel will supervise the field work.

The Linotype Co. announces that Archer O. Albin, who for the last six years had been head of its technical div., has been made assistant director of research and development. Edward D. Betts has been placed in charge of the technical div., with Briant W. Patterson as assistant. R. R. Mead, for many years director of research and development, continues in that capacity. Mr. Albin joined Linotype's headquarters staff in 1929. For three years he followed a training course in all departments of the factory. Later, as a member of the company's technical div., he worked on parts catalogs, booklets and other technical items, and handled inquiries of a technical nature from the field. He has been a featured speaker at many newspaper mechanical conferences. In 1940 he was made head of the technical div. Mr. Betts became a member of the Linotype organization five years later, and also was put through a three year course of technical training in the Brooklyn factory. During the ten years that followed, he filled various positions at Linotype headquarters having to do with technical aspects of printing, publishing and ad-

A. G. Badman (left) is one of those executives from foreign lands who have been touring the United States recently in search of technical information and information about equipment. Mr. Badman is Technical Officer of the Government Printing Office, New South Wales, Sydney, NSW, Australia. He came to the United States early in February and returned to Australia in August. He is shown here with Louis R. Beck, Export Manager, Harris-Seybold Co., Cleveland. The Government Printing Office employs approx. 1100 people. Forty Linotypes are used in the composing room. Mr. Badman is a member and past president of the Sydney Club of Printing House Craftsmen.

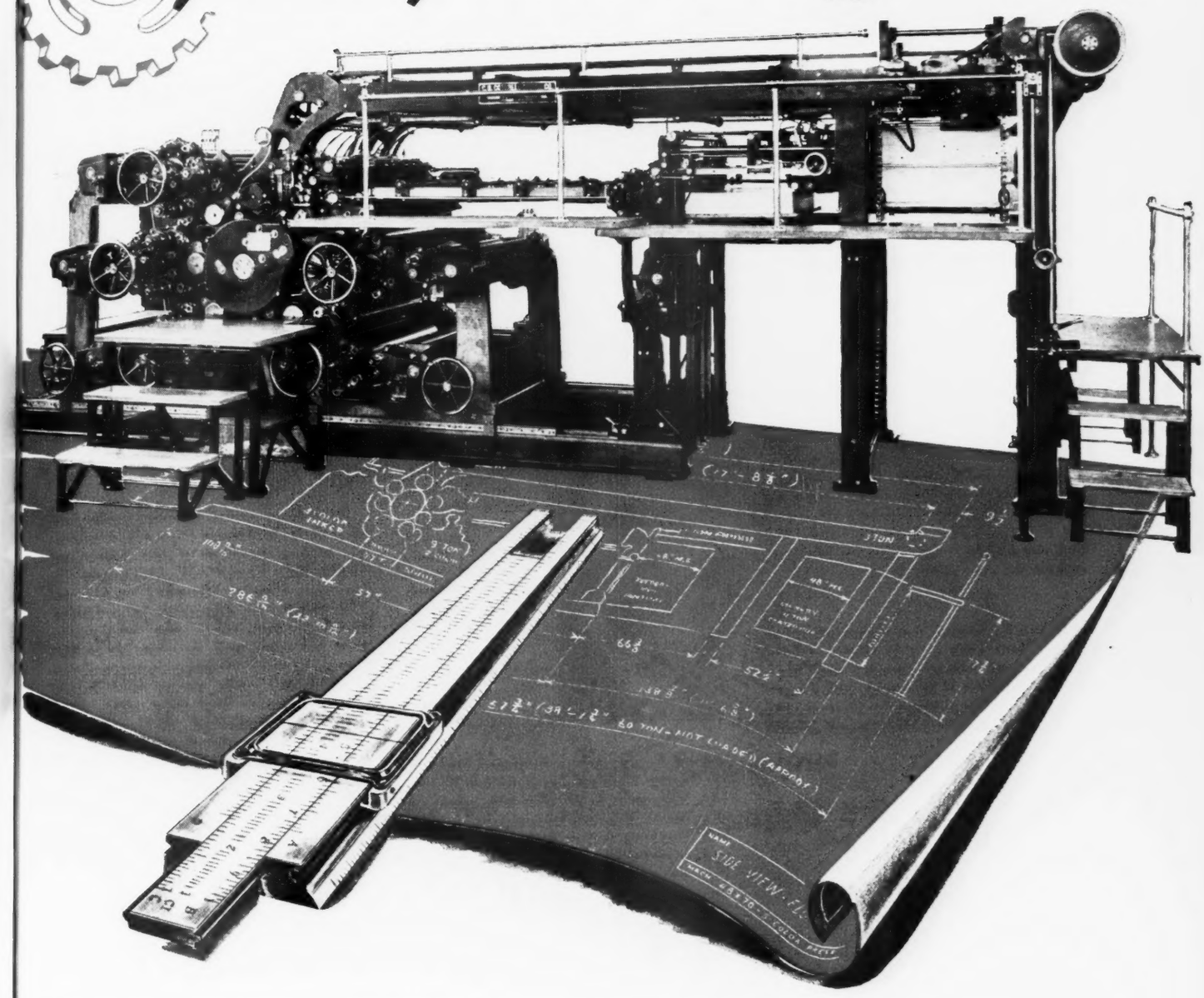
vertising. For the last four years he represented the company as a production engineer in Pennsylvania. Mr. Patterson joined the Linotype organization in 1939, where his duties have included special projects research and overseas sales. For three years he served in the Army Air Forces.

The appointment of three district sales engineers was announced recently by the Steel and Tube Div. of the Timken Roller Bearing Co., Canton, O. Sherman R. Lyle was appointed to the Cleveland district. Lyle, formerly in the Timken Steel sales department, joined the company in 1940 as metallurgical assistant in the Steel and Tube Div. William E. Bryden was appointed to the Chicago District. Bryden joined the company as an assistant in the metallurgical department in 1937 and in 1940 became sales engineer for the New York district. Alfred J. Kinnucan was appointed to the New York district. During the war Kinnucan was on active duty in the U. S. Navy.

Everett C. Miller has returned to the Linotype Parts Co. as a representative of that firm. Mr. Miller enlisted in the U. S. Army in August 1942 and at the time he was relieved from active duty he was a captain.

F. Ray Linda has joined St. Regis Paper Co's. New York office as assistant to Carl H. Hartman, director of technical development and vice president of St. Regis Sales Corp., the St. Regis sales subsidiary. Linda is well-known in the paper industry through many years of sales engineering and sales development work.

Engineering makes the difference!



There are presses and presses . . . Among them all the Cottrell five-color sheet fed rotary press stands out for its sheer mechanical perfection. *Engineering* makes the difference.

Printing at a speed of up to 5500 sheets per hour, this press assures maximum production at reduced costs with no sacrifice in quality.

Behind the engineering superiority of this press lies the "know how" experience which comes with 91 years of service to the printing industry.

C. B. COTTRELL & SONS CO.
Westerly, Rhode Island

New York: 25 E. 26th St. • Chicago: Daily News Bldg., 400 W. Madison St. • Claybourn Division: 3713 N. Humboldt Ave., Milwaukee, Wis. • Smyth-Horne, Ltd., 13 Bedford Row, London W.C. 1, England

R 91 YEARS OF GROWING WITH THE PRINTING INDUSTRY

Cottrell

Assets of the Wood Flong Corp., producers of dry mats for newspaper printing, were acquired by a group headed by

Lunsford P. Yandell, President of Wood Flong Corp.

Lunsford P. Yandell, of New York, N. Y., it was announced after a meeting of the stockholders recently. A newly formed corporation, bearing the same name as the predecessor company, elected Mr. Yandell as president. Nelson Maynard was named chairman of the board. Mr. Maynard has been associated with Wood Flong Corp. for the past 35 years. Mr. Yandel has been active in the management of manufacturing, selling and construction enterprises. Recently he served the American Red Cross in setting up facilities for the armed forces in England and on the continent.

James E. Cogan, sales representative in the New York area of Sigmund Ullman Div. of Sun Chemical Corp., died September 12th at his home. Mr. Cogan served Sigmund Ullman for 30 years and will be greatly missed by his many friends and associates.

John T. Renshaw has joined the E. P. Lawson Co., Inc., New York, N. Y., manufacturers of paper cutting ma-

John T. Renshaw joins E. P. Lawson Co.

chinery and binding equipment, as sales representative in Pennsylvania, West Virginia, Maryland, Delaware and New Jersey, it was announced by David W. Schulkind, president. Renshaw's headquarters are in the Bourse Bldg., Philadelphia, Pa. It was also announced that Sears, Ltd., with offices in Toronto, Montreal, Winnipeg and Vancouver have been designated sole distributors for the Lawson line in Canada.

Paul A. Bennett, in charge of typographic layout with the Linotype Co., was a featured speaker at the convention of the International Association of Printing House Craftsmen held at the Mount Royal Hotel, Montreal, in September. Bennett talked on "Type Design" at the typographic clinic September 9.

Edward J. Sheridan has joined the Sun Chemical Corp. as a member of the technical staff at the Harrison plant. Sheridan has specialized in development and research in the science of pigment dispersion for inks, lacquers, paints and coatings.

Merger of three departments in the Mechanical Goods Div. of The Goodyear Tire & Rubber Co. to accelerate post-

E. W. Sanders, head of Tank Lining Department at Goodyear. Printers' Supply Dept. has been integrated into Tank Lining Dept.

war expansion was announced recently by W. C. Winings, Mechanical Goods Div. manager. E. W. Sanders, manager of printers' supplies and industrial rolls, will head up the new tank lining and rubber-covered roll section into which the printers' supply department has been integrated. Sanders joined Goodyear in 1928 as a sales trainee and served in various districts as a Goodyear technical man. He was appointed assistant manager of printers' supplies in 1936. He is a graduate of the University of Michigan where he majored in mechanical engineering.

Robert J. Longmore, 72, stereotype superintendent of the Chicago (Ill.) *Tribune* died recently in Evanston. Mr. Longmore was widely known among mechanical executives throughout the newspaper field. He attended many ANPA conventions and spoke at a number of the meetings. Mr. Longmore joined the *Tribune* in 1898. He was appointed superintendent of the stereotype department in 1903, a position he has held ever since. During this time he saw his paper grow and develop. He is survived by his wife, a daughter and two sons, Robert J. jr., an employee in the engraving department, and David, a stereotype department employee at the Chicago *Tribune*.

Ralph L. Poore has joined the service staff of the Linotype Co. and is covering New England states as a maintenance engineer. Poore was born in Portland, Me. and has had much practical experi-

Linotype Company's maintenance engineer in New England, is Ralph L. Poore.

ence in newspaper and printing plants. He learned the Linotype under Richard Haskell, former head machinist with the Portland *Press-Herald*. Later he worked in the commercial printing plant of L. L. Marshall of Portland, and then for 17 years served as machinist with the Gannett Publishing Co. In 1942 Poore enlisted in the Army Air Forces and flew as engineer on B-17's. On one of his flights, a bit of rough going necessitated his baling out, with other members of the crew, and into membership in the Caterpillar Club.

John G. Koontz, former production manager of Wartburg Press of Columbus, O., and a member of the Columbus Craftsmen's Club, will reestablish the Lutheran Printing Plant in New Guinea. The plant was destroyed by bombing during the war. Mr. Koontz must anticipate his needs and procure his equipment. He will have one American assistant but will train native boys in the printing trade. Hymnals, catechisms; text, devotional and medical books, leaflets, congregational and school records will be published in three languages at the plant.

M. Charlaff, Director of S. A. Litho Co., Ltd., offset-lithographers, Cape Town, South Africa, paid a visit to the offices of *Printing Equipment Engineer* during the latter part of July. Mr. Charlaff, who by the way, is accompanied by Mrs. Charlaff, has been touring the United States. The objective of his visit to America is to investigate new equipment and Graphic Arts processes for his firm. S. A. Litho Co., Ltd., is one of the largest o-set-lith printing establishments on the continent. His firm employs 250 people. Ten presses are operated. Practically all of the products of this firm consist of four color process work.

Address Correction

In the July issue of *Printing Equipment Engineer*, it was stated that Frank M. Sherman, the new Executive Secretary of the International Trade Composition Association would maintain an office in Philadelphia at 520 Chestnut Street.

His address as given in the July issue is erroneous. The correct address is 1015 Chestnut Street, Philadelphia 7, Pa. Please address all communications to ITCA and Mr. Sherman at 1015 Chestnut Street.

SPECIAL FEATURES SERVE WELL

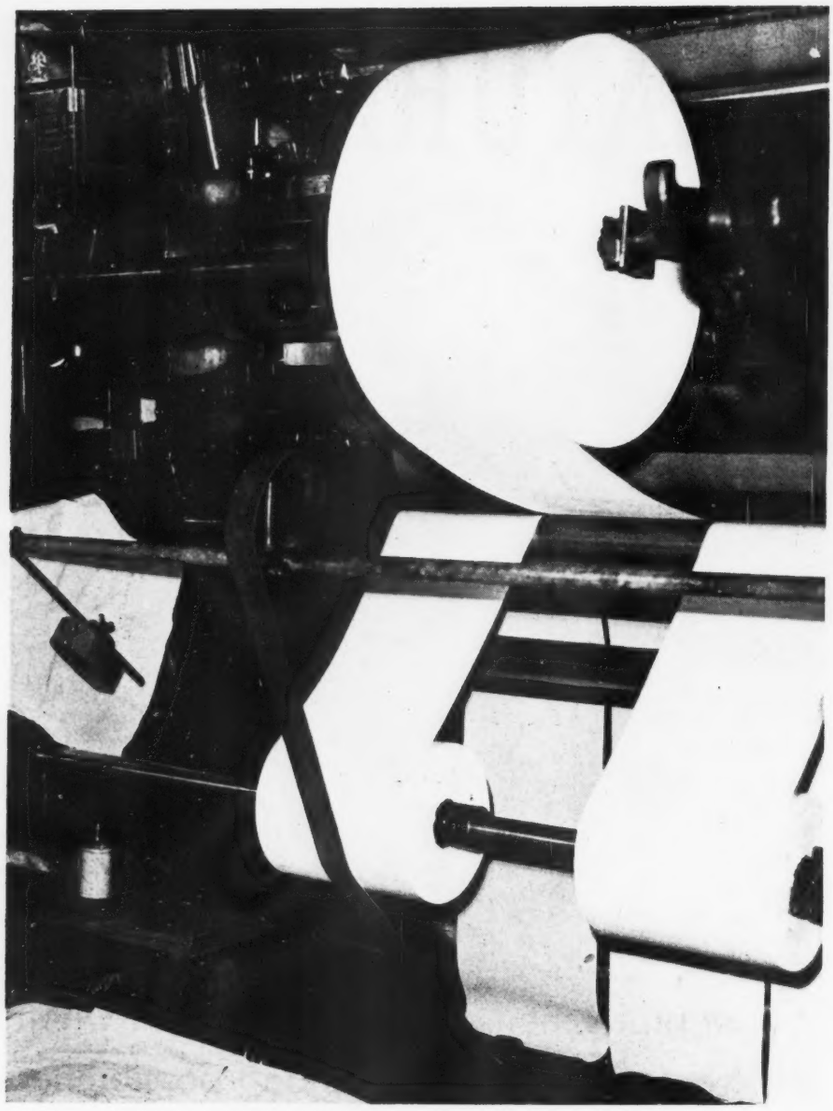
SIX-MOLD DISKS, like Self-Quadders, Thermo-Blos and other Linotype devices, are built to improve or increase production at the very moment when time is precious. They have created new conditions and possibilities of handling hitherto difficult composition requirements.

> *You know that I never had much faith in the quadder and six-mold disks when you first showed them to me. But, from what the operators tell me and the way production has increased, I would say that this is the best investment we have ever made.*

> *We are pleased to note that with the many new attachments which have been added to your machines in recent years, they still maintain their standard of day-to-day production, in addition to giving us many labor-saving opportunities without that trouble which antiquated printing machinery so often is heir to.*

29 RYERSON STREET — LINOTYPE — **BROOKLYN 5, N. Y.**

Linotype Spartan Family and Memphis Medium Condensed



Using a counter weighted metal strap of unique design, roll tension is maintained on one of the six "mill-end" or "cheese" rolls used in the production of Sunday tabloid sections of the Portland (Ore.) *Oregonian*. The balance of the rolls use conventional tension devices. Three additional short rolls along with a standard size roll are used on the opposite end of the press.

110 T. *of newsprint per month saving is being made by Portland (Ore.)* Oregonian *through "cheese" rolls for printing tabloid sections*

A SAVING of 110 T. of paper per month is being effected by the Portland (Ore.) *Oregonian* through the use of "cheese" or "mill-end" rolls instead of the usual standard sizes in the production of Sunday supplement tabloid sections. This saving is based on the fact that the *Oregonian* is already using the maximum mill production for other sections of the paper and prior to the new usage it was necessary to send these short rolls back through the paper making machines for re-processing into the standard sizes.

Rolls used in the new type run are each 15¼ in. with a total of six being used along with one standard size roll. The net product from the press is two tabloid sections of 12 pages each and one standard newspaper section of eight pages. Most of the pages are printed in three colors and black. A Pancoast color press is the printing equipment.

An ingenious system of maintaining roll tension has been worked out by the mechanical staff of the paper. Two of the three "cheese rolls" are run in the standard way using the regular tension blocks, according to Harry Hale, *Oregonian* production manager. A third roll is run on the same shaft with a short size roll but is mounted so that it will run free of the shaft itself.

Tension is then maintained on this free running roll through a special spring and counter weight system. Adjustments are easily made by changing the position of the counter weight on the shaft.

The same mechanical system is in operation on both ends of the press making possible the total use of six mill-end rolls at one time. It is believed that this makes the largest number of such rolls used at one time by any newspaper.

Some mechanical difficulties were experienced at first, according to Mr. Hale but after the original adjustments were established no greater difficulty was encountered than with regular press runs. Waste is kept to a minimum and the usual press speeds are maintained. There has been no difficulty with color register.

Basic reason for working out the plan was the hope of getting the greatest possible mileage from the available paper at the mill. Portland papers get all of their paper from the Hawley Pulp and Paper Co., at Oregon City which is 12 miles from Portland. This mill is running on a 24-hour, 7-day-per-week basis.

St. Regis Invades South

Marking its first move into the southern kraft pulp and paper industry, the St. Regis Paper Company of New York has purchased the Florida Pulp & Paper Company, at Pensacola, Fla. Heretofore, St. Regis paper-producing properties were confined to the northeast and Pacific northwest. At the same time, announcement also was made of construction by the Alabama Pulp & Paper Co., in which St. Regis will have an interest, of a new 250 T. kraft paper mill now under way on a site to the Florida company's mill, expected to be completed in December 1947, and proposed new multiwall paper bag plant, together involving a total cost of $10,000,000.

Offset Press Booklet

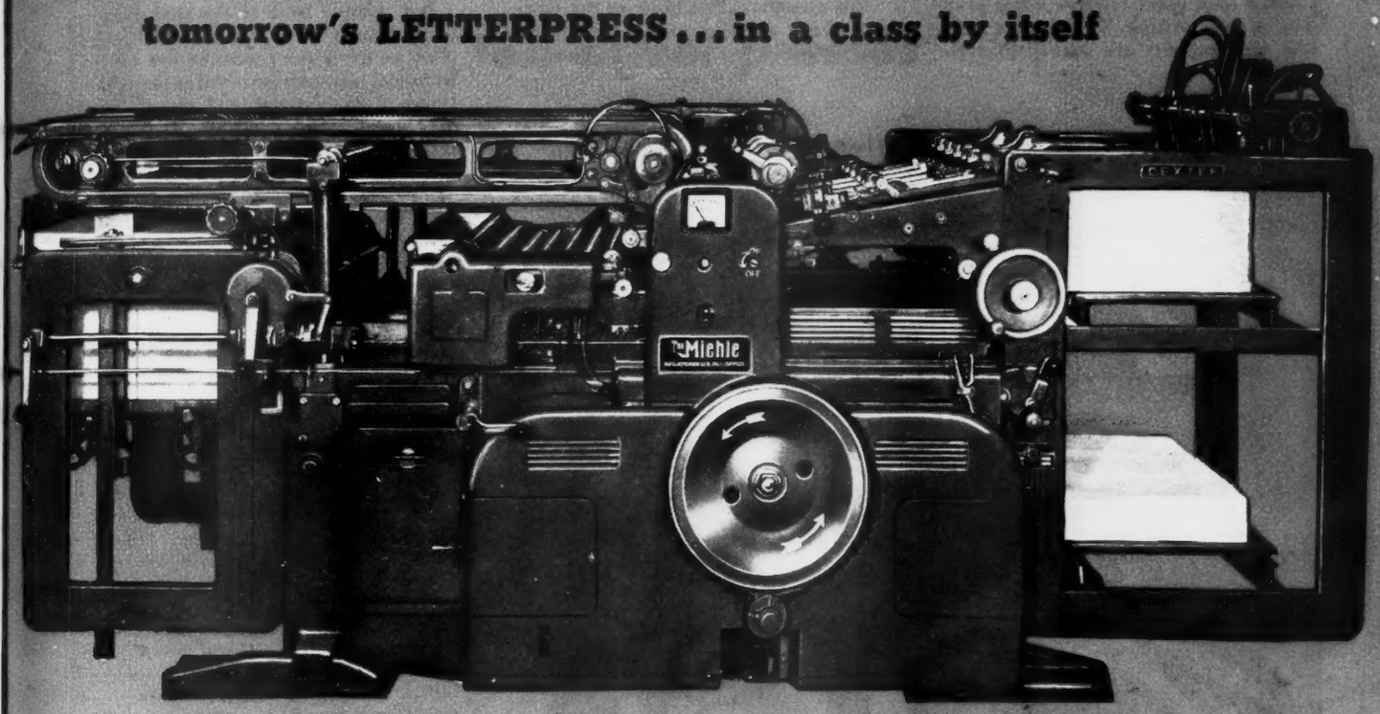
THE Miehle Printing Press & Mfg. Co. has published a 20-page booklet describing the Miehle 61 and 76 offset presses. The booklet has many illustrations some of which show the improved registering process for stream feeding. Other illustrations show the delivery, the inking and dampening mechanism. Each size press is available in single, two or four color models.

The booklet may be secured upon request to the Miehle Printing Press & Mfg. Co. or *Printing Equipment Engineer* will be glad to pass it along for you.

let's talk about the...

new Miehle 29

tomorrow's LETTERPRESS... in a class by itself



HERE is a high speed, fully automatic letterpress, built for tomorrow's jobs . . . And Miehle 29 performance goes beyond the conservatively rated 4500 impressions per hour. It is fastest where the most time is generally lost—in makeready, adjustments and changeovers.

Wherever profits depend on productive press time, the 29 has all the features to turn out a wide variety of fine printing on tight schedules . . . The kind of schedules that need no allowances for tedious adjustments or time out after the run has started.

Complete data on the new Miehle 29—its many exclusive features and profit-making possibilities—is yours for the asking. Your Miehle Representative will be glad to tell you about this revolutionary new press . . . Or we will send a detailed, fully illustrated bulletin direct upon request.

MIEHLE PRINTING PRESS & MFG. CO.
2011 Hastings Street (14th and Damen)
Chicago 8, Illinois

condensed specifications Miehle 29

- **Speed Range** 2500 to 4500 I. P. H.
- **Sheet Size**
  - Minimum 8½ x 11
  - Maximum 22 x 28
- **Printing Surface**
  - Locked in Chase 20¼ x 26
  - Locked on Bed 20¼ x 27
- **Capacity of Feeder** 34" pile
- **Capacity of Delivery** 34" pile
- **Approximate Weight** (net, including electrical equipment) 10,260 lbs.

MOTORED BY KIMBLE

THE MIEHLE 29 LETTERPRESS
product of years of development

BOOKS

RECEIVED

Typography, Layout & Advertising Production

NEWCOMERS in the typographical and advertising agency fields are a problem. The problem consists of getting them to recognize and become familiar with good typographical practices in copy writing. This doesn't mean that typographers are asking that the tail wag the dog in preparing the copy. Typographers never demand that copywriters subsidize their copy to inflexible typographical demands. But good copywriting and typography are synonomous —neither one can't perform its function without the other.

This is the objective of the newly published book *Typography, Layout & Advertising Production*. The book was prepared by Edwin H. Stuart and Grace Stuart Gardner, of the nationally known advertising typography house of Edwin H. Stuart, Inc., Pittsburgh.

We commend this book to the attention of not only the people for whom it was prepared, but to all production and mechanical executives in printing plants wherever dispersed. It is a valuable reference work for the experienced typographer and the fellow who is supposed to check up at intervals to see that his firm's typographic quality isn't slipping. Fine typography is dependent entirely upon the human element because the human element carries around in his head the rare good judgment, the apt-to-be ephemeral important niceties and the fundamental rules which, when incorporated in typography help to compel reader interest.

But, getting back to the real purpose of the Stuart book, it is intended to explain in elementary manner the various technical processes involved in the preparation of an advertisement and all forms of printed matter, from writing the copy to final insertion in the publication or release to the printer.

The authors explain: "This book will give you an idea of the elements that comprise an ad or printed piece and just what you must do to work intelligently with the copy staff, craftsmen and supply houses . . . Typography has been covered in greater detail to the end that the general typographic standard may be raised, resulting in maximum sales return from every advertising expenditure."

Apparently, the preponderance of the text matter in this book was prepared by Edwin H. himself. The explanation of type and its physical construction is punchy—gets across the information without waste of words. When is an italic not an italic? Stuart explains this in *The Proper Use of Italic*. Perhaps the most important chapter in the book is entitled *The Tricky Art of Spacing*. The writer wants to state that even if this Art isn't exactly observed one hundred per cent in this magazine, yet Stuart's discussion on spacing is convincing.

Basic Fundamentals of Good Typography deals with readability, margins, balance, shape harmony, tone harmony, indentions, and selection of body type. Various explanations regarding reproduction, electrotyping, mats, mounted and unmounted plates and cuts and other techniques common to the industry are presented for persons needing such information.

There are eleven pages of *Dictionary of Technical Terms* which covers definitions from Accents to Zinc Halftone.

The price of this book is One Buck and may be obtained from Edwin H. Stuart, Inc., 422 First Ave., Pittsburgh, Pa.

Lettering From A to Z

AUTHOR Clarence P. Hornung states this volume has been planned to give designers, craftsmen and students of lettering a convenient means of reference to fine alphabets in many styles, and to stimulate creative thinking in letter de-

FOR
ADVERTISERS' INDEX
SEE PAGE 5

1 Triplemetal is ideal for fine halftones up to and including 150 line, the perfect solution to high quality college annuals at low cost and for close register color work.

2 Triplemetal is inexpensive and also saves additional time and labor because it can be machine etched with the speed of zinc and re-etched.

3 Triplemetal is economical because it is tough and hard and will withstand long runs (as many as 5,000 mats reported from a single plate!).

TRIPLEMETAL

The Patented Zinc Alloy
for fine screen halftones and color work
Tough — Durable — For Direct Mat Making

Now available in
Edes Gravure Finish

Send for Details

THE Edes MANUFACTURING COMPANY
PLYMOUTH, MASS. U.S.A.

REPRESENTATIVES

CHEMCO PHOTO-PRODUCTS COMPANY
New York, Atlanta, Dallas, Chicago, New Orleans, Boston

ALLAN B. CROKE CO.
Boston

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THOMPSON-HAYWARD CHEMICAL CO.
Kansas City

E. H. WALKER SUPPLY CO.
Washington, Richmond

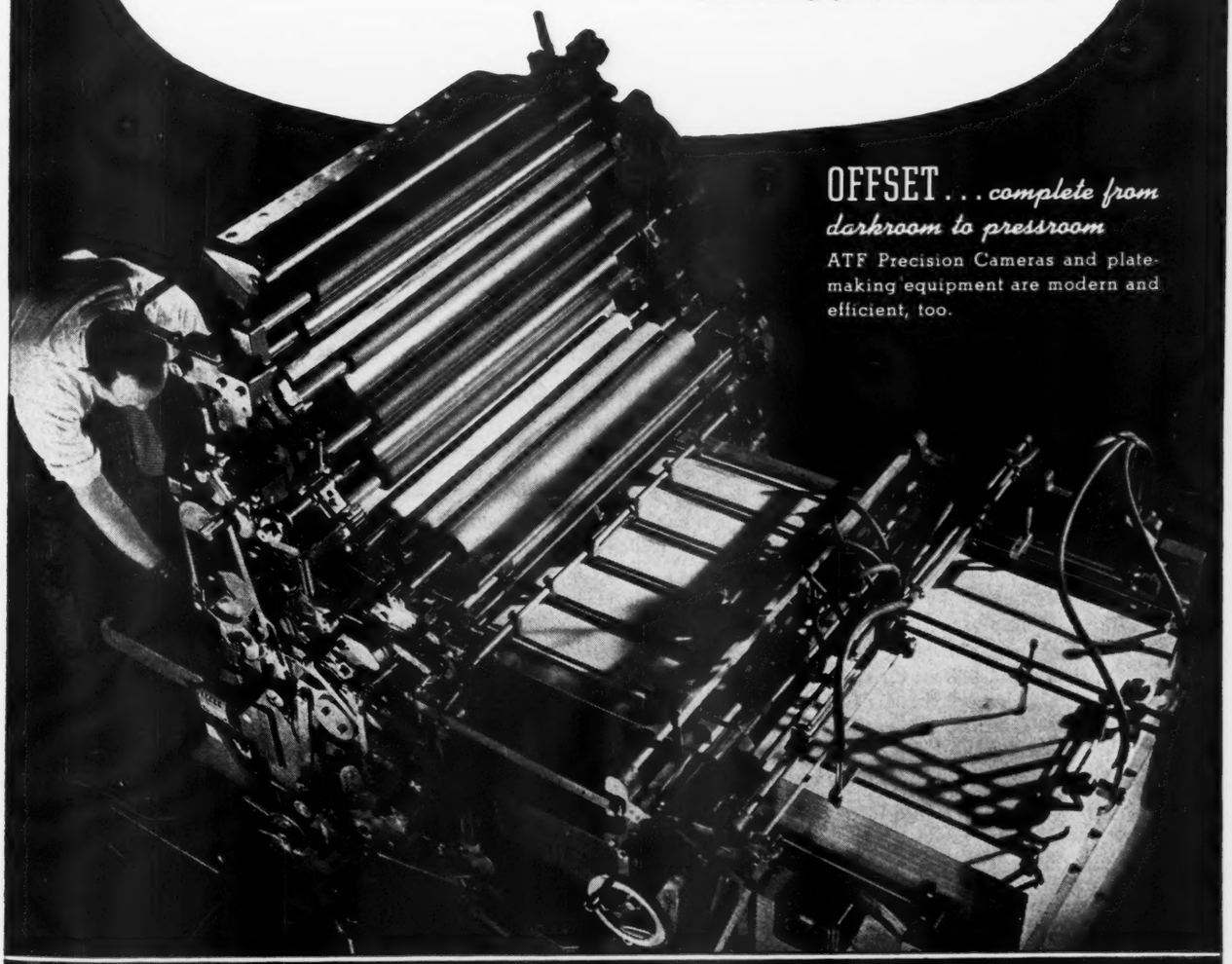
EDES ENGRAVING METALS
Regular Zinc
Hard Matrix Zinc
Triplemetal
Copper
Brass
Gravure Sheets

ATF CHIEFS

Job-offset presses

BUILT to handle a wide range of run-of-hook work simply, speedily, at a profit, the ATF *Chiefs* are every-day presses around the busy commercial shop. ATF *Chiefs* come in three most useful sizes: 14x20, 17x22, and 22x29. Ask your ATF Salesman, or write for commercial samples of actual runs that show what the *Chiefs* can do for you.

Insure the future of your business through active participation in the industry's cooperative research and educational programs—join the Lithographic Technical Foundation.



OFFSET . . . *complete from darkroom to pressroom*

ATF Precision Cameras and platemaking equipment are modern and efficient, too.

AMERICAN TYPE FOUNDERS *200 Elmora Avenue, Elizabeth 8, New Jersey*

sign. The book is also valuable for reference purposes in any commercial printing plant, or in the hands of those planning printing executives who have frequent need of source material.

The book contains an introduction by Frederic W. Goudy who states Mr. Hornung is concerned with presenting "the fundamentals and essentials of our alphabet, based on sound tradition."

In Chapter I, the origins of the alphabet are discussed. Each of the letters is examined from its basis, through evolution and development into modern forms.

In Chapter II are discussed the principles of letter design with reference to roman and italic. Spacing of roman letters is given attention.

Practically the entire balance of the book is devoted to the presentation in ample size of alphabet styles. These are shown in full page plates and are grouped according to type family. The selection of alphabets actually covers a wide range. The selections as a whole are characterized as much by variety as by unerring good taste.

Included in the 116 full page plates are Roman and Italic, Gothic and Blackletter, Script and Manuscript styles and Sans Serif and Square Serif.

The section on initial letters will be an inspiration to anyone.

A liberal variety of Monograms and Trademarks are exhibited in the closing pages with comments by the author. The designs themselves and the author's comments will be especially useful to designers in this field.

Lettering From A to Z—By Clarence P. Hornung. Consists of 153 pages, size 8½ in. by 11¼ in. Bound in dark blue cloth, gold stamped. Price, $5 per copy. Order direct from Ziff-Davis Pub. Co., 185 North Wabash Ave., Chicago 1, Ill.

ROP Color Clinic

(Continued from page 32)

The use of these colors also eliminates to a great extent the necessity of buying a large inventory of color inks to keep on hand.

In order to run more than one color and black it is imperative that you have one unit that is reversible. Also portable ink fountains, such as the *News-Sun* uses are a great convenience in washups, as well as ink savers.

One prime requisite of good register is good tension. The tension must be uniform at all times or your color will walk in and out of register.

Above are the steps followed in preparing and printing the four-color ad on the reverse side. We use the same methods on all color pages, whether 1, 2 or 3 colors and black.

Employee Relations

At the closing banquet on Sunday evening held in the Chateau du Jour, James F. Stiles, jr., president of the Illinois Chamber of Commerce, addressed the executives upon the subject of *Building Harmonious Employee Relations.*

"It is merely a process of personalizing relationships with the employee that clicks in building harmony in an organization," said Stiles. "There is a difference between personalizing and fraternalizing, and paternalizing, however," he said.

Stiles said the underlying reasons beneath work stoppage perhaps were misunderstanding, based on distorted statements, jealousy, and struggle for prerogatives. He said that when employer and employee themselves conferred and did not rely on lawyers or other representatives, they usually get together.

Among the points stressed by the speaker with respect to employee relations are the following:

1. There must exist an inviolable integrity of contracting parties.

2. The recognition of the right of free competition should prevail as a basic principle of fair trade relations. You can't promote personal prejudice and hope to perpetuate peacetime prosperity.

3. Decentralize authority affecting personnel relations so that they can be personal.

4. Build men as well as material.

5. Top management must invest its personal time in personnel.

"SAMPLE TESTING"
DURING EVERY PROCESS OF MANUFACTURE

In the production laboratory — one of several laboratories at the Burgess plant — tests are made at regular intervals during the manufacture of Burgess Chrome Mats. This laboratory, equipped with the most modern devices, manned by skilled and experienced technicians, provides accurate knowledge of the quality and condition of the mats through each step of the manufacturing process.

Samples of the primary mix, for example, are taken from the refining equipment at regular intervals for testing in this laboratory. Whenever analysis reveals the slightest deviation from established standards, steps are immediately taken to correct the condition. If necessary, the entire batch is discarded. Complete reports of the analyses are kept, to become part of the permanent record of every mat manufactured in the Burgess plant.

A Laboratory Product BURGESS Chrome MATS

Check... test; check... test — that is the formula which maintains the unfailingly superior quality of Burgess Chrome Mats.

BURGESS CELLULOSE COMPANY
Manufacturers and Distributors of Burgess Chrome and Tone-Tex Mats
FREEPORT, ILLINOIS
Pacific Coast Representative RALPH LEBER CO., 426 Polson Bldg., SEATTLE, WASH.

Patents

For The Graphic Arts Field

Covering patents issued August 13, August 20, August 27, September 3, September 10.

All new patents for the Graphic Arts are reported exclusively for Printing Equipment Engineer by Invention, Inc., an industrial patent research organization in Washington, D. C. Invention, Inc., presently has the only staff in the country that examines, in the U. S. Patent Office, the complete printed copy, drawing by drawing and page by page, every one of the several hundred new patents issuing each week. Printing Equipment Engineer is the only trade publication in its field offering a report based on this complete coverage. For copies of the patents listed here specify the patent numbers and send 25c for each separate patent, or 10c for each trade mark or design patent (stamps not accepted) to the Commissioner of Patents, Washington, D. C.

Binding, Cutting, Perforating

2,405,868. CUTTING AND CREASING PRESS that will handle such flat materials as paper, impregnated papers, cardboards, corrugated cardboard, composition materials, plastics, fabrics, wood and plywood, rubber and even soft metals. The head holding the cutting and creasing dies is stationary and an arcuate table is both oscillated and reciprocated in the cutting and creasing operation. It is not necessary for the head to slide to a stop at the end of each operation. The arrangement has a number of advantages over the conventional cylindrical press. In addition it has the feature of the cylindrical press whereby only a tangential portion of the platen cutter meets the table. Hence a lesser pressure is required than that which would be necessary to cut and crease a whole sheet at once. The oscillation of the arcuate table permits the material to be fed in readily at one end and taken out at the other end during the movement of the arcuate table back to its initial position. Invented by Lloyd A. Whittaker and Harold F. Peterson, Franklin, Mass. Assigned to Thomson-National Press Co., Inc., Franklin, Mass. Application March 8, 1944. 11 claims.

Composing Room Equipment

2,406,651. MONOTYPE MACHINE KEYBOARD ATOMIZER by which suitable light oil sprayed into the parts, especially the keyboard, of a Monotype machine to coat the parts with a thin film of lubricant to prevent rust and sticking. The device is designed to be hooked up with the Monotype air line and effects a cleaning operation which makes less frequent the need for dismantling of the over 75 valves and pistons and other working parts of the Monotype. The cleaner and oiler comprises a container for oil, a filler and oil measuring tube at the side of the container, an air intake conduit at the other side of the container, spaced branches from the conduit into the container, a valve in the conduit between the branches and a screened atomizing tube in the oil of the container associated with one of the branches. Covers are provided for the container and the outlet conduit. Invented by Leslie G. Bakal, Richmond, Va. Unassigned. Application April 27, 1945. 6 claims.

Feeding, Folding and Delivery

2,405,637. MILL ROLL STAND of the type used for lifting heavy rolls of sheet material and supporting them in a rotatable manner. A pair of arms is keyed to a shaft and these rotatably support a roll of sheet material with a brake device for controlling the resistance to rotation of the roll. A motor with a two-speed transmission is provided, for lifting the roll into place and for rotating it after it is in place. Screws are provided on both sides of the stand for raising or lowering the roll to assure even unrolling. Stand is constructed with two sets of arms and frames so that a reserve roll may be kept in position for replacing the empty roll. Invented by Herbert C. Behrens, Haddon Heights, N. J. Assigned to Samuel M. Langston Co., Camden, N. J. Application June 7, 1943. 10 claims.

2,406,006. SHEET FEEDING MECHANISM in which the leading edge of each sheet is registered and held in accurate register as it moves toward the printing machine. A sheet carrying belt driven about 20% faster than the receiving cylinder delivers the sheet to moving stops. These moving stops

SPEAKING OF FAMOUS CHARACTERS . . .

What characters . . . and what reputations for quality!

ALL OVER THE COUNTRY, you'll find the best engraving shops choose and use Zomo Electric Zinc and A-Z Alloy. Wherever you go, these little trade characters signify smooth performance . . . quick, clean etching . . . perfect register, and dependable uniformity.

Melted and cast in the electric induction furnace, precision rolled, and finished with the flawless Machine Cut Finish, Zomo offers the ideal all-around metal and A-Z Alloy meets the needs for long press runs, mat duty, and fine screen halftones.

Zomo Electric Zinc and his tough, rugged side-kick, A-Z Alloy, are obtainable from leading engraving metal suppliers.

ZOMO ELECTRIC ZINC ◆ A-Z ELECTRIC ALLOY

are on a sheet timing cylinder with its periphery moving at a slightly higher speed than the sheet receiving cylinder. When sheet is pressed against the stops, which are moving slower than the belt, it is slowed down, enabling the sheet to be presented with its front edge in accurate register. Use of this apparatus is said to enable higher speeds than heretofore practiced. Invented by William K. Eckhard, Newark, N. J. Assigned to R. Hoe & Co., Inc., New York, N. Y. Application March 27, 1943. 19 claims.

2,406,765. SHEET FEEDING MECHANISM for separating sheets from a supply and advancing them toward a press. The uppermost sheet is gripped near its rear edge and the gripper, or sucker head, is raised and forwarded in an epicycloidal path and swung forwardly and downwardly in a circular arc to advance the sheet. When the sheet is released the gripper is returned to a position above the rear portion of the next sheet. Further refinements by the same inventor are disclosed in the next-succeeding patent. Invented by Charles W. Harrold, University Heights, Ohio. Assigned to Harris-Seybold Company, Cleveland, Ohio. Application June 10, 1942. 43 claims.

2,406,766. SHEET FEEDER by which the upper sheets of the pile are fluffed pneumatically and the topmost sheet is gripped by suction near its rear edge while the pile is fluffed. Simultaneously, localized corrugations are formed in the sheet in the region of the gripped portion. The gripped portion is raised and tilted, and simultaneously, the portion of the sheet directly in front of the gripped portion is rolled around a curved body. Air is blown forwardly under the rolled up sheet, while the next sheet is held against forward movement. The rolled up portion of the sheet is unrolled to move the sheet forwardly along the top of the pile. Invented by Charles W. Harrold, Cleveland, Ohio. Assigned to Harris-Seybold Company, Cleveland, Ohio. Application May 5, 1944. 24 claims.

2,405,847. APPARATUS WITH BRUSHES FOR REGISTERING SHEETS to be taken by the cylinder grippers of a printing press, a cutting press, etc. Device is composed of a support upon which the sheet moves to the front and side guides, and a pivot whose axis extends at an acute angle to the support. Sheet engagers are mounted to turn about the axis of the pivot and are continuously moved toward the support. These have brushes, the bristles of which sweep over the sheet so as to push it parallel to the support. This apparatus eliminates "bouncing back" of sheets as they move into front registery, and insures correct positioning of the sheet. Invented by Andrew Neuhart, Pittsburgh, Pa. Assigned to Miller Printing Machinery Co., Pittsburgh, Pa. Application June 30, 1941. 43 claims.

2,406,857. SHEET DELIVERY APPARATUS for handling sheets successively from a printing press. Apparatus consists of a pile support, a shaft, and connections between the two through which the weight of the pile support acts on the shaft, tending to turn it in the direction required to lower the support. A movable control actuates the shaft in step-by-step movement to lower the pile support. When a pile of sheets is removed, the movable control is turned and the pile support is moved upward, through a ratchet on the shaft and a pawl, into the beginning position. Device keeps the pile support in correct position regardless of the weight or thickness of the sheets on it. Invented by August A. Saul, Pittsburgh, Pa. Assigned to Miller Printing Machinery Co., Pittsburgh, Pa. Original application April 3, 1941. Divided and this application May 25, 1944. 12 claims.

2,406,936. SHEET DELIVERY MECHANISM which permits continuous operation of the machine, yet uses no extra floor space. A plurality of sheet grippers are controlled by the operator to open and deposit sheets on either of two delivery platforms. The conveyor has two paths of travel with a set of grippers for each. Traveling tapes are adapted to support sheets in their passage to the second platform and connections enable the gripper-opening-cam and tapes to the second platform to be placed into or out of operation. Invented by Arthur B. Woodruff, Brecksville, Ohio. Assigned to Harris-Seybold Co., Cleveland, Ohio. Continuation of application Serial No. 412,390, September 26, 1941. This application June 13, 1945. 5 claims.

2,407,239. FRICTION DRIVE for web propelling, nipping, or folding rollers

Here's Where clean, crisp printing begins . . . with the slug from your line-casting machine. MONOMELT assures fine slugs, and consequently fine printing, by keeping type metal in balance and by casting *automatically-fed* metal at consistently correct temperature. MONOMELT also saves time and metal handling costs . . . cuts dross . . . increases machine production.

WRITE TODAY for details of how the MONOMELT System can improve production and appearance of your publication.

MORE THAN 9,000 MONOMELTS are giving trouble-free service throughout the nation. Adaptable for Linotype, Intertype, Linograph, Monotype, Ludlow and Elrod machines.

THE MONOMELT COMPANY, INC.
1611 POLK STREET NORTHEAST MINNEAPOLIS 13, MINNESOTA

of printing and folding machines has an improved slip clutch for yieldingly driving a paper or cloth web, or sheets, so that peripheral speed of the web engaging rollers conforms to the linear speed of the web or sheets. A rotatable shaft of the device has a web engaging roller and a sleeve having a friction face. A driven roller rotates about sleeve and has a friction surface and a friction collar which rotates with shaft and is movable in the direction of shaft axis. A flat spring ring, perpendicular to axis of paper engaging roller, surrounds the shaft and operates between an adjusting nut and the friction collar. Axial movement of the adjusting nut causes the spring ring to bias the collar towards its friction face and press driven roller between collar and friction face so to yieldingly drive the web at the proper speed. Invented by Alexander J. Albrecht, West New York, N. J. Assigned to R. Hoe & Co., Inc., New York, N. Y. Application October 9, 1942. 5 claims.

Miscellaneous

2,405,754. MULTICOLOR PRINTING is accomplished in this novel process by making colored component images on the edges of a pack of metal plates, each component being made on a separate pack. The packs are then separated and reassembled in succession, one plate from each pack, thus producing a series of line images. If there are three color components for the cyan, magenta, and yellow colors, every third line will be a part of the same component image. By suitable selective mechanism each set will be separately inked and the three sets placed with their freshly inked edges in a plane and at once connected with the impression-receiving surface upon which there will be printed a three-color image in the form of fine lines, every third line being of the same color. In the preferred form of the invention, the three packs are each of a certain size so that when the three packs are assembled, one dimension of the resulting printing surface will be three times the original size of one pack. This is inked and printed upon a rubber blanket stretched in one dimension to several times its unstretched size. Invented by Alexander Murray, Rochester, N. Y. Assigned to Eastman Kodak Company, Rochester, N. Y. Application February 26, 1944. 12 claims.

Plate Making

2,405,749. SQUARE FINISH PHOTOENGRAVED HALF-TONE PRINTING PLATE has its printing surface, composed of dots, rounded away from printing contact along the edges so that the surface dots gradually recede from the central printing area. This is accomplished by beveling the straight edge of the back of the plate, and then turning the edge down by suitable pressure on the printing surface to form a rounded edge that carries the dots over the edge until it softly removes itself automatically from printing contact. Thus an impression made from the plate will have a soft gradually shading-off border. Invented by Lawrence Kern, Philadelphia, Pa. Unassigned. Application September 2, 1943. 2 claims.

2,406,684. POLYMERIZATION OF METHYL ISOPROPENYL KETONE. The polymer gives clear colorless plastics under hot molding which are of great value in the production of moldings of irregular shape, lithograph plates, etc., where accurate and faithful reproduction is desired. They may also be used as substitutes for glass in the manufacture of impact-resistant automobile windshields, airplane turrets, etc. The method of making comprises dissolving monomeric methyl isopropenyl ketone in an aqueous solution of hydrogen peroxide so as to form a single phase water solution of the monomeric ketone having a pH of from 6.0 to 7.5 and then heating the solution at a temperature of between 50° and 90° C., while excluding an organic solvent. Invented by Josef W. Heyd, Dayton, Ohio. Assigned to Monsanto Chemical Company, St. Louis, Mo. Application June 28, 1943. 11 claims.

2,406,770 . CAMERA FOR OBTAINING PHOTOMAGNETIC COLOR OPERATION NEGATIVES made from copy into a half-tone or other screen or grid to produce the required textures for use on printing plates. There is a carrier or holder for the sensitized or negative plate and the photomagnetic screen or grid, and carriers and holders for the lens and copy, and also, preferably, for a light source for illuminating the copy. The carriers are adjustable relatively to the sensitized plate carrier and to each other for focusing and obtaining the required size of the photographic

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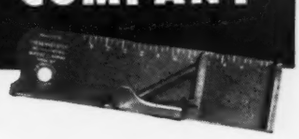

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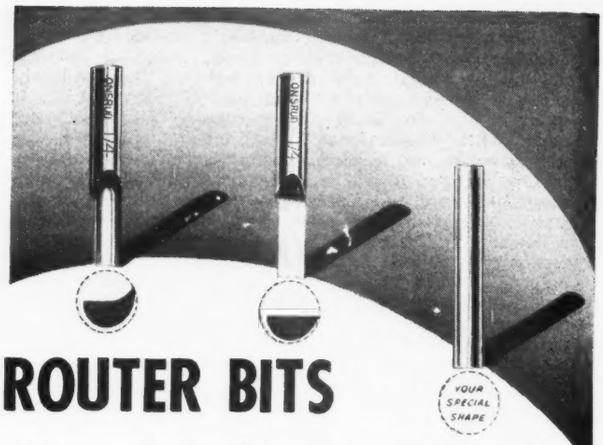

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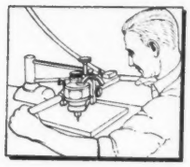

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Onsrud

image. Invented by William C. Huebner, New York, N. Y. Unassigned. Application December 6, 1943. 11 claims.

2,406,883. SECURING OF PRINTING PLATES to a base having spaced grooves along its surface is accomplished by plate register hooks. Plates have intersecting grooves along the back which the hooks engage. Each hook has an axially imperforate combined jaw and lock and hook propelling gears. The hook body and one of the gears have axially aligned holes for the insertion of a suitable instrument into operative engagement with the gears. Plates may be positioned on their bases more closely together and the combination is said to be stronger. Invented by Hans J. Luehrs, Westerly, R. I. Assigned to C. B. Cottrell & Sons Company, R. I. Application February 17, 1943. 6 claims.

2,407,211. HALFTONE REPRODUCTION PROCESS for minutely detailed work including line drawings, maps, as well as half-tones, without loss of either fine light or fine dark details. Detail is retained by unsharply masking the record being printed at least during the major part of the printing exposure. The mask itself may be unsharp or may be used unsharply with an unsharpness sufficient to smooth out, degrade, or obliterate finer details. The mask is negative to the record it is masking and should have an effective masking factor between .2 and .7, preferably between .3 and .5. The mask may be made on "Kodak commercial film" or on "Kodak 33 plates" developed to a gamma of about .7. Invented by John A. C. Yule, Rochester, N. Y. Assigned to Eastman Kodak Company, Rochester, N. Y. Application May 26, 1944. 18 claims.

2,407,290. LITHOGRAPHIC PRINTING PLATE having a durable printing surface and an insoluble metallic compound deposited in the non-image ink-repelling surface of the plate. Photographic film is exposed to light projected from a copy, developed and tanned, and washed to remove the soluble portion, leaving an ink receptive image. The non-image portion is then impregnated with mercuric chloride solution which is contacted with the light-affected particles of the non-image portion. Mercuric chloride is thus converted to insoluble mercurous chloride, producing a uniformly distributed mercurous chloride deposit throughout the non-image portion. Invented by John D. Pursell, St. Louis, Mo. Unassigned. Application January 21, 1944. 2 claims.

Printing Inks and Related Chemicals

2,405,558. METHOD OF PREPARING A STABLE RESIN of color below 5 Amber, which forms hard, glossy, tack-free coatings, from beta-pinene. In one method of preparation, a beta-pinene terpene fraction containing beta-pinene in excess of 50% of the terpenes present is brought into reactive contact at a temperature below 0° C. with a fluoride or boron as a polymerization catalyst to form a resin polymer of beta-pinene having a drop melting point above 120° C. and a molecular weight above 1000. Catalyst is then separated from the resin. Invented by Joseph N. Borglin, Wilmington, Del. Assigned to Hercules Powder Company, Wilmington, Del. Application March 11, 1941. 9 claims.

2,406,586. DYESTUFF COMPOSITION which can be used for dyeing and printing textile materials and is composed of a salt of an acid polybasic acid ester of a leuco compound of a vat dyestuff, and caffeine. In one example a sodium salt of an acid sulfuric acid ester of a leuco compound of a vat dyestuff, a thickener, and caffeine are mixed as a paste and applied to the textile. Dyestuff is developed by oxidation in an acid medium. Invented by Earl W. Clark, Buffalo, N. Y. Assigned to Allied Chemical & Dye Corporation, New York, N. Y. Application August 13, 1943. 14 claims.

2,406,649. LIQUID COATING COMPOSITION comprising 100 parts cellulose acetate, 50 parts toluene sulfonamide-formaldehyde resin, 20 parts triphenyl phosphate and 10 parts acetanilide dissolved in a solvent mixture consisting of 300 parts acetone, 150 parts ethyl alcohol, 50 parts ethyl lactate and 20 parts triethyl citrate. The coating is said to be suitable for coating paper and paper goods, metals, glass, wood, etc. It is free flowing, highly transparent and resistant to wear and weather. Basic dyestuff may be added. Invented by George Witty, Long sland City, N. Y. Unassigned. Application November 30, 1944. 1 claim.

2,406,795. LITHOGRAPHIC PRINTING INK, which shows a minimum tendency toward greasing and considerably less of such tendency as compared

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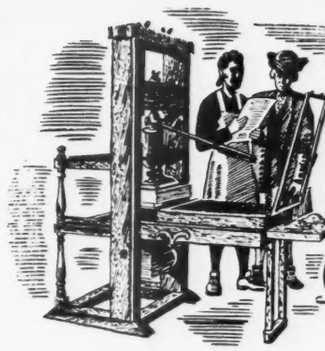

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to a similar ink made with bodied linseed oil. This ink is prepared economically by using the pentaerythritol ester of a tall oil as the principal vehicle. It may be used as the sole nonvolatile ingredient; altough the ester is somewhat too viscous to be used in pure form, it can be reduced with a solvent having the necessary volatile characteristics. Most preferably it is reduced to a desirable lithographing body by admixture with a relatively minor percentage of another drying oil. Invented by Dominic J. Bernardi and Robert T. Florence, Bronx, N. Y. Assigned to Interchemical Corporation, New York, N. Y. Application June 25, 1943. 2 claims.

2,406,878. PRINTING INK DRIED BY ULTRA VIOLET LIGHT. The usual pigment is dispersed in a vehicle capable of being dried by ultra violet energy. It includes a resin having a conjugated system of double bonds, and contains from 1% to 10% of dicinnamal acetone. Solvent used is petroleum distillate of zero dimethyl sulfate value. Inks made in this manner have been dried in as little as a few seconds when exposed to ultra violet light. Invented by Paul Whyzmuzis, Corona, Long Island, N. Y., and Harry Linkletter, Englewood, N. J. Assigned to Interchemical Corporation, New York, N. Y. Application July 10, 1943. 3 claims.

2,407,446. UNSATURATED ESTER OF CARBONIC ACID and a monohydroxy ether of a saturated polyhydroxy alcohol and a monounsaturated linkage alcohol having the unsaturated linkage between two carbon atoms in an aliphatic straight chain. The new unsaturated carbonates are generally nonresinous compounds usually liquid at room temperature. The monomeric esters are valuable as plasticizers. Other uses include: solvents, insecticides, and liquid coating compositions. They may be polymerized and formed into sheets, plates, etc. The fusible polymers may be dissolved in suitable solvents and used as coating and impregnating composition for paper, metal, fabrics, etc. Invented by Maxwell A. Pollack, Austin, Texas. Assigned to Pittsburgh Plate Glass Company, Pittsburgh, Pa. Application June 12, 1942. 12 claims.

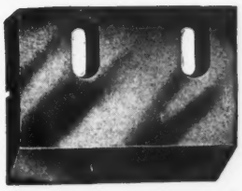
2,407,479. NEW SYNTHETIC POLYMERIZED MATERIAL usable in coating, adhesive, and molding applications. The material is the product of polymerization of a mixture of copolymerizable materials consisting of a polymerizable monohydric alcohol polyester of an alpha unsaturated alpha beta polycarboylic acid and a polymerizable esterification product of a monohydric alcohol, a polyhydric alcohol and a number of carboxylic acids at least one of which is an alpha unsaturated alpha beta polycarboxylic acid. They may be used as coatings for metals, such as copper wire, fabrics and papers. Pigments, fillers, etc., may be added. Invented by Gaetano F. D'Alelio, Pittsfield, Mass. Assigned to General Electric Company, Schenectady, N. Y. Application October 31, 1939. 14 claims.

Printing Presses and Equipment

2,405,795. ROTARY PRINTING PRESS that has a simple and effective cylinder "throw-off" and adjusting mechanism in which a novel means is employed for moving the form and ink supply cylinders relative to the impression cylinder and relative to each other. Two hand shafts are operatively connected to their respective form and ink cylinders so that the turning of one will cause the turning of the other. However, the shafts may also be disconnected to permit them to move the form and ink supply cylinders individually. Invented by Hans J. Luehrs, Westerly, R. I. Assigned to C. B. Cottrell & Sons Company, Westerly, R. I. Application February 5, 1943. 29 claims.

2,406,118. COUNTING MECHANISM for printing machines. It comprises a pocket for receiving an edge portion of selected copies (or "count" copies) carried by a rotary or S fly, and means for actuating the pocket to deposit each selected copy on the conveyor in desired projected position in relation to preceding copies. The pocket is returned, out of the path of following copies on the fly, to receive the next selected copy. The pocket is located at the free end of a flipper arm pivotally mounted at its other end so that, during operation, the movement of the pocket follows a square or rectangular path which is in a plane transversely of the fly. This movement, produced by synchronized cam action, causes the pocket to move downwardly in timed relation to the speed of the fly to remove the "count" copy therefrom, then laterally outwardly to release the copy and allow it to drop on the conveyor, then upwardly over

Knife Grinding



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a path which enables it to clear the edges of the following copies on the fly and finally inwardly to be ready to receive the next "count" copy. Movement of the flipper arm is slower than in known mechanisms of the kind, since it does not have to avoid contact with other copies leaving the fly, and identical projection of successive "count" copies at all press speeds is obtained. Invented by William Arnold Whitehead, Preston, England. Assigned to The Goss Printing Press Company, Chicago, Ill. Application September 16, 1943. 3 claims.

2,406,205. PRINTING PRESS having a printing couple, one member of which is a printing roll, and gripper and registration stop fingers having a fixed position with respect to the roll at the time a sheet held thereby enters the bite of the printing couple. The gripper is caused to open to receive a sheet, and the sheet is fed against the stop means while the gripper is open. According to the invention, printing gripper and feeding means so cooperate that failure to obtain perfect registration, which is often the result in existing feeders when the sheets have a tendency to curl, is virtually impossible. Here the sheet is guided all the way into the jaws of the gripper so that there is no possibility for a curl to cause the leading edge of the sheet to fail to enter the gripper or to pull away from the stop fingers and thus produce inaccurate registration. Invented by William Ward Davidson, Evanston, and Frank J. Breman, Chicago, Ill. Assigned to Davidson Manufacturing Corporation, Chicago, Ill. Application December 7, 1942. 6 claims.

2,406,287. METHOD OF APPLYING GLUE TO A PORTION OF A WEB which has printed matter applied to certain other portions in the same cycle of operations. Apparatus consists of the printing unit of a rotary press in which the web is printed and, in combination therewith, a glue applying unit which includes an impression cylinder, a gluing cylinder, a glue fountain containing a suitable glue, a doctor blade, and a heating element. Gluing cylinder is formed with pockets or recesses so glue will be applied in dots. When glue dries it does so in a coating of extremely nonuniform thickness. This is said to prevent curling of the printed product. Invented by Hugh Matthew Grimshaw, Glen Ridge, N. J. Assigned to Publication Corporation, New York, N. Y. Application September 14, 1944. 1 claim.

2,406,718. EMBOSSING BOWL used in the roller embossing of sheet material, such as coated fabric or paper. The primary use of the invention is to increase the useful life of such paper bowls. The embossing bowl is capable of being cut by a counter embossing roll to form a clear well defined impression; and it is also highly resistant to temperatures up to about 300 degrees F. It comprises a large number of centrally perforated paper discs impregnated at least on their peripheries with a water soluble polyvinyl alcohol composition. A mandrel passes through the perforations, and end plates hold the discs in compressed relation. Invented by Raymond E. Thomas, Newburg, N. Y. Assigned to E. I. du Pont de Nemours & Company, Wilmington, Del. Application July 31, 1943. 4 claims.

2,406,726. COUNTING MECHANISM described especially in relation to an apparatus for printing price tags. The mechanism comprises a higher order pointer, a lower order pointer and ratchet and pawl arrangement for restoring the higher order pointer to zero position from any indicating position to which it may have been set. A ratchet and pawl arrangement is used to restore the lower order pointer to zero position from any indicating position to which it may have been set. The pawls are actuated by common means. Operation of the lower order pawl by its ratchet is prevented until the higher order pointer has been restored to zero position, and further operation of the higher order ratchet by its pawl is prevented after the higher order pointer has been restored to zero position. Invented by Joseph Weimont, Bogota, N. J. Assigned to A. Kimball Company, New York, N. Y. Application August 25, 1944. 5 claims.

2,406,928. FOUNTAIN INKER DRIVE MECHANISM for rotary printing presses which insures an adequate and uniform supply of ink to the plate cylinder. Device is composed of an ink fountain, a fountain roller which rotates in contact with the ink in the fountain, and a pickup roller which transfers ink from the fountain roller to a transfer roller. The transfer roller

"Our Ads in the Palladium ALWAYS look inviting,"

—remarks the merchant to his advertising manager. "With the others it's in-and-out—good one day and disappointing the next . . . I think eye appeal is just as important as top circulation . . . Let's give more space to the Palladium and take it out of the others." Most advertisers recognize one medium as having UNIFORMLY good production. Often it is the medium printed with the aid of dependable Certified Mats.

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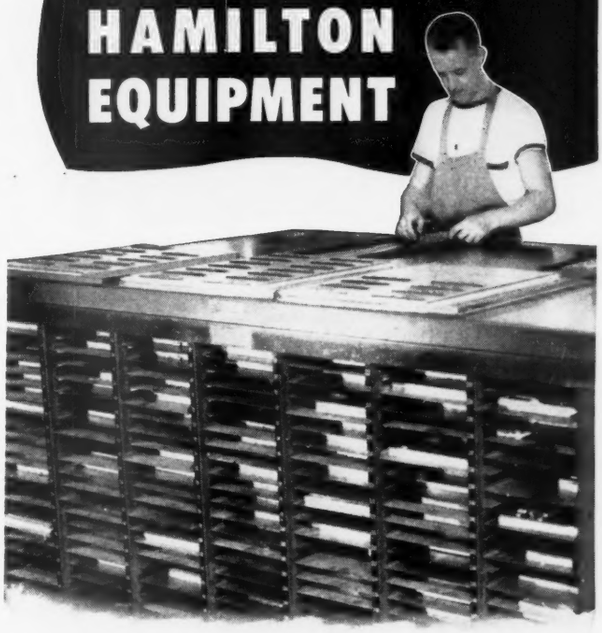

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transfers ink to the ink drum. Vibrating rollers distribute it uniformly over the drum. Form rollers transfer the ink to the forms on the plate cylinder. Fountain roller is driven from the press gear train but when press is running slowly an independent means run the roller. This insures adequate supply of ink at all press speeds. Invented by Auburn Taylor, Charleston, W. Va., and Emory W. Worthington, Chicago, Ill. Assigned to The Goss Printing Press Company, Chicago, Ill. Application March 2, 1943. 11 claims.

2,407,001. SUGAR DERIVATIVE that is a viscous, water-soluble, hygroscopic liquid suitable as a plasticizing and conditioning agent for flexible glues, glue print roll compositions, cork glue compositions, gelatin products, and as chemical intermediates. The process for producing these sugar derivatives comprises heating glucose and propylene glycol in equimolecular proportions in the presence of a strong mineral acid catalyst. The heating is conducted at a temperature sufficient to cause the reaction mixture to clear and not over about 140 degrees C. and under conditions in which volatile reactants and volatile reaction products are retained in the reaction mixture, the heating being continued until the reaction reaches equilibrium. Invented by William C. Griffin, Tamaqua, Pa. Assigned to Atlas Powder Company, Wilmington, Del. Application July 16, 1943. 17 claims.

2,407,002. GLYCOL GLUCOSIDES AND DERIVATIVE THEREOF. Instead of heating the reaction mixture only until an equilibrium is attained, in this patent the heating of the reaction mixture is continued under conditions permitting the escape of volatile materials until the product contains not more than about 5% of residual sugar. The glucosidic compositions of the invention are chiefly of value as plasticizers and conditioning agents for hydrophylic materials. A highly valuable series of chemical derivatives of the glucosides includes, e. g., partial esters of hydrophobic acids useful as emulsifiers and dispersing agents. Invented by William C. Griffin, Newport, Del. Assigned to Atlas Powder Company, Wilmington, Del. Application October 21, 1944. 21 claims.

2,407,003. EMULSIFYING AGENTS PRODUCED FROM GLYCOL GLUCOSIDES. As in the two preceding companion patents, Nos. 2,407,001-2, glucose and propylene glycol are reacted under the specified conditions until equilibrium is reached, and the heating is continued under conditions permitting the escape of volatile materials until the product contains not more than 5% reducing bodies. The last product is reacted with an oxyethylating compound in the ratio of one mol of the product to from 4 to 12 mols of the oxyethylating compound to form an oxythylene ether; the latter is reacted with 4-5 molecular equivalents of oleic acid. In a test of emulsifying power the product gave a water absorption value of the order of 2500. Invented by William C. Griffin, Newport, Del. Assigned to Atlas Powder Company, Wilmington, Del. Application October 30, 1944. 10 claims.

2,407,183. NATURAL OR SYNTHETIC RUBBER COMPOSITION suitable for the fabrication of printers' rolls, coating, impregnating and waterproofing. Composition comprises an ester of alkyl phenyl ethyl alcohol in which the alkyl substituent appears on the ring, and rubber selected from the group consisting of natural rubber and rubber-like polymers of butadiene, isoprene, piperylene, and 2-chlorobutadiene. The use of fatty acids or mixed fatty acid esters of a mixture of m-, p- and o-tolylethyl alcohols as a plasticizing agent is a feature of the

"Trapping"

THIS is a loosely used term. Really, it means just what it says, a first-down color traps the following color and holds it. The term applies only to wet printing. Indirectly it applies to the manner in which the second color takes on the first. The program is for the first down color to be heaviest (stiffest or with most tack) and each succeeding color to decrease in tack so that it may be trapped by the tack in the preceding color. Obviously the difference in tack cannot be two great else the last of four colors will be sloppy.

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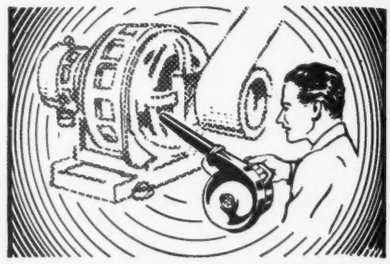

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invention. Invented by Frank J. Soday, Swarthmore, Pa. Assigned to The United Gas Improvement Company, a corporation of Pennsylvania. Application October 17, 1942. 17 claims.

2,407,335. APPARATUS FOR SMOOTHING HOT MELT COATINGS on webs or sheets of paper after application with a rotagravure cylinder. The coatings are applied to one surface of a moving web in a multiplicity of regularly spaced dots. A number of vertically arranged, closely spaced heated scraper blades with narrow rounded faces are mounted in slotted rectangular holders. Electric strip heaters are used to bring the blades up to an elevated temperature. The blades contact the coated surface and are reciprocated back and forth as the web passes over them. Thus the coating is smoothed into a glossy film of uniform thickness. The reciprocation of the bars tends to dislodge any foreign matter and the heat re-melts any material which has solidified, assuring a perfectly smooth surface. Invented by Arthur M. Wickwire, Jr., Great Barrington, Mass. Assigned to Interchemical Corporation, New York, N. Y. Original application December 31, 1941. Divided and this application July 10, 1943. 3 claims.

For Patent Research in the U. S. Patent Office, or a prompt estimate on any type of search, address INVENTION, INC., Munsey Bldg., Washington, D. C.

Analysis of Printing Processes

(**Continued from Page 40**)

specialty converter anticipates that a repeat order will be forthcoming, and stores the plates for this purpose. This fact will influence the type of process chosen, because some types of plates are more adaptable to re-use than others In addition, if a large store of plates is built up, this may represent a very considerable inventory of materials if one process is used, and a rather small one for another process.

In considering the selection of a process on the basis of average length of orders, and repeat orders, the following general facts should be kept in mind. It is well to recognize that this discussion is a general one, and that each converter has his own specific problem to solve.

Letterpress printing may be performed with a variety of plate types such as plain stereotype, nickeled stereotype, rubber, electrotypes, and engraved cylinders.

Plate Costs

The cost of these different types varies greatly, ranging from the low cost of a plain stereotype, capable of producing a few thousand impressions to the very expensive engraved steel cylinder, with the ability to turn out many hundred thousand impressions. The cost of makeready also varies greatly, generally being higher for the less accurate and less expensive types of plate. Usually, although makeready costs are greater for the cheaper plates, the reduction in makeready costs does not warrant the selection of a more expensive process even for short runs, and the process is chosen on the basis of adequate quality over the length of run being considered.

If the number of repeat orders is large, the converter is confronted with the choice of storing his plates, or making new ones for subsequent runs.

Stereo Plates

Plain stereotype plates are not suitable for storing in large quantities because of several factors. These plates are relatively short lived, and being quite soft are susceptible to damage in handling. Because of the weight of re-usable metal involved, excessive inventories may be built up in a short time, and this is not desirable. It is customary therefore to melt the plates after first use, and store the mats for repeat orders. The fact that the mats may easily be stored and reused is a decided advantage of this process.

Rubber Plates

Rubber plates are long lived, and it is practical to store them even in large

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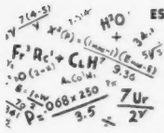
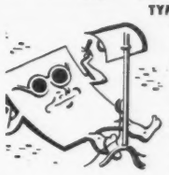


ESSENTIALS OF GOOD TYMPAN: The finest makeready is only as good as its tympan. Good tympan must have these four qualities: (1) Hard, uniform surface; (2) High tensile strength, (3) Proof against oil and ink solvents, (4) Proof against moisture and extremes of temperature. Unless a tympan fulfills all of these four points, it is not a good tympan paper—not good enough to insure the printing results you want to give your customers.

COMMON CAUSES OF DAMAGE TO MAKEREADY: Among the most common causes of damage to makeready and tympan are: (1) Excess heat and dryness due to extreme summer temperatures, exceedingly warm pressrooms and use of flash-drying inks, (2) Excess humidity encountered on rainy, muggy days, (3) Changes in temperature due to standing overnight when pressroom becomes exceedingly cold.



TYMPAN OFFSET: Frequently printers experience difficulty with tympan offset, due to insufficient drying time. In such cases, the following may be helpful: (1) Use usual makeready for first run, but be sure to carry two or three sheets of 60 lb. book between pressboard and draw sheet, (2) Run first form in usual manner with regular makeready, (3) Pull the two sheets of book. It might be necessary to pull three on light forms. This will allow you to back up the job immediately without tympan offset or smudge. This method is satisfactory on almost all forms except those containing the finest screen halftones.

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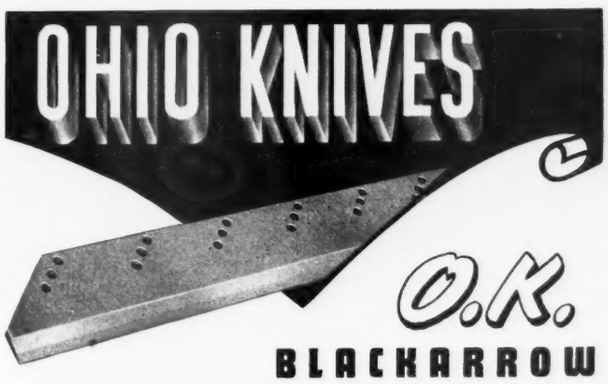

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quantities. They are not easily damaged in handling, and the fact that the rubber material is not re-useable and much lighter in weight than a metal plate, encourages this practice. As in the case of stereotypes, the mats may also be stored if desired.

Electrotypes

Electrotypes present much the same problem as stereotypes with regard to handling and weights of metal involved. There are several factors which tend to promote the storage of electrotypes where stereotypes would be discarded. As a general rule, the specialty user of electrotypes handles relatively few plates as compared with a manufacturer utilizing stereotypes, and the amount to be stored will be less. In addition, because electrotypes are not cast from easily stored mats, the cost of reproducing one of these plates is quite great. Under these conditions storage may be desirable.

Engraved Cylinders

The same factors which influence the saving of electrotypes for re-runs are more pronounced in the case of engraved cylinders. The excessive original cost of this type of plate far outweighs the cost of storage if there is the slightest possibility that they will be placed on the press again.

Offset-Lith Plates

Offset printing is produced from either albumen or deep etch plates. Either type of plate may be made with the same equipment, and most converters select one or the other type depending on the length of run. The deep etch plate requiring an extra step in the camera department, and considerably longer in the plate department, is more expensive, but is more than justified on long runs.

The cost of offset plates as compared with letterpress plates varies considerably with the class of work being produced. For work of a simple nature, the cost compares quite favorably with the cheaper types of letterpress plates.

One of the greatest advantages of the offset plate is the fact that a minimum of makeready is required on the press. If the converter is engaged in a quantity of short-run work, this factor is a most important one, as press down-time may be reduced to a minimum through the selection of this process.

Offset plates may be stored for reuse, but this practice often involves considerable difficulty because of the nature of the plate. One of the undesirable features of the offset process is that the length of run is not always predictable. This is especially true with albumen plates which for reasons which are not always apparent may fail unexpectedly, or give unusually long runs.

Some readers may disagree with this statement and take the stand that if all of the factors entering into the offset plate manufacturing process are controlled accurately, plate life will be predictable if the plate is correctly handled on the press. Under laboratory supervised conditions it is quite possible that ideal results may be obtained Unfortunately. a great many converters do not have the necessary control over the process, and do from time to time experience difficulty with their plates, especially during reruns after storage. An unanticipated failure of a plate on a repeat run is most undesirable as it tends to disturb the whole production schedule. However, it is practicable to store the negatives in much the same manner as stereotype mats. These have the advantage of being useable an indifinite number of times, whereas the stereotype mat has a relatively short casting life. A further advantage of the offset negative as compared to the stereotype mat, is that it is relatively easy to make minor changes in the negatives.

Many users of offset plates with sheet-fed presses regrain their plates, and use them a number of times on the same press. This is not generally practical on web machines, because the plates are usually bent at the head and tail in such a manner that it is not feasible to straighten them out for the regraining process. Unless the head and tail can be

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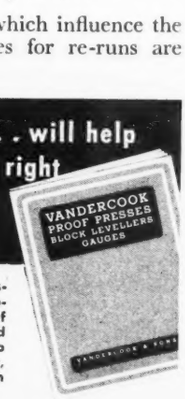

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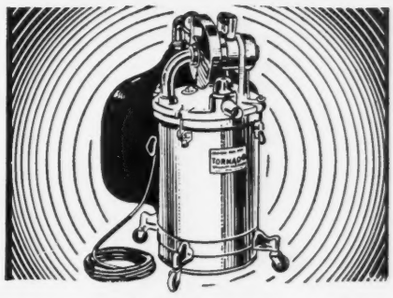

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FOR

ADVERTISERS' INDEX

SEE PAGE 5

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cut off and the plate used on a cylinder of smaller diameter, there is little salvage value in these plates beyond the value of the metal.

Gravure Cylinders

Gravure printing is generally accomplished with copper-plated cylinders carrying a suitable design. This process results in plates of very long life, and is suited to those types of work which require a large number of impressions. The cost of these plates is considerable, and their manufacture requires considerable skill.

A properly made gravure cylinder requires no makeready, and indeed the operator has almost no control over the results once the cylinder is completed.

Because of the value of the cylinders bearing the etched copper printing image, they are generally stored for reruns as long as there is any possibility of their being used further. As in the case of the offset process the negatives may be filed for possible reuse. The steel body of the cylinder is a permanent piece of equipment. The printing image is etched on a thin plated shell of copper which may be stripped off after the press run has been completed, and the steel cylinder is replated for the next job.

Auxiliary Equipment

The fifth major factor which must be taken into consideration is the auxiliary equipment which is required in addition to the press. This refers specifically to the machines needed to prepare the plates for the different processes. Many converters do not make their own plates, but purchase them from firms specializing in this work.

Purchasing Plates

Generally, no difficulty is encountered in purchasing plates in most localities with the exception of stereotypes. While the stereotype process for commercial work has been making rapid strides within the last few years, plants furnishing plates to the trade are not as numerous as they probably will be in the not-too-distant future.

Stereotype plates are of two kinds—those that are cast and finished in curved form, and those which are cast flat but are curved and then finished as in the case with electrotypes. Stereotype plates also may be used plain or they may be nickled for long runs. Special equipment built to the particular press cylinder must be available for the manufacture of cast-curved or curved plates. Non-plated stereotype plates are used for short runs. When properly nickled, press runs of many hundred thousand may be obtained from them.

Installing Plate Department

If the converter decides to install his own plate department, there is a considerable difference in the costs of the equipment required for the various processes.

It is not practicable in an article of this length to enter into an extensive analysis of the equipment required to produce plates for each of the processes.

The exact nature of the work performed by each converter varies considerably and some can produce plates for their particular type and quality of work with much less equipment than may be necessary for another more complex printed product.

As a general rule, however, the investment in equipment required to manufacture plates by photo-mechanical methods, *i.e.*, offset plates, gravure plates, and etched cylinders, is less than is required for the straight mechanical plates such as stereotypes and electrotypes. However, the photomechanical processes, especially gravure and etched cylinders, require a very high degree of craftsmanship in the production of satisfactory plates.

Of all processes, good rubber plates can probably be produced with the least investment in equipment, as a molding press is the most expensive requirement. Upon this single machine the converter can make both his mats and plates, which may be subsequently curved to any diameter desired.

It is of course impossible to set down any specific rules for the selection of a process, because the individual situation and requirements of each converter are unique. As mentioned previously, the fundamental object of the development is to devise that method which enables the converter to obtain the most efficient production on his special type and volume of work.

The competent development engineer must be thoroughly familiar with both the economics and the mechanics of all possible processes for accomplishing the desired result. As has been pointed out, each process has certain advantages and disadvantages which must be viewed in the light of the specific problem at hand. For this reason, it is essential that all of the pertinent facts relating to the proposed operations be determined and made available to the engineer before a sound decision as to the process can be made.

Offset Motion Picture

Premiere showing of the new Harris-Seybold motion picture, explaining lithography to buyers of printing, is scheduled for the near future, according to H. A. Porter, vice president in charge of sales for the Harris-Seybold Co. The 16 mm. sound and color film will provide, an elementary, non-technical picture-story of offset-lithography.

Entitled *How to Make a Good Impression*, the film runs approximately 25 min. The story is built around the preparation and production of a typical job in an average offset shop. The basic differences between lithography, letterpress, and gravure, are portrayed. The motion picture will be available for "open house" meetings and special showings before printing buying audiences.

To film the action of a four-color Harris offset press, a platform was suspended from a travelling crane so that the camera could get a bird's-eye-view from feeder to delivery in one uninterrupted shot. Telescopic lenses were used to catch the action of small parts inside the press and microscopic lenses enabled the camera man to enlarge minute processes such as dot-etching techniques. The more technical phases of platemaking and press operation are simplified and presented by means of animation.

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MATERIALS HANDLING—By Harry E. Stocker. This book is of vital interest to mechanical and production executives in printing and publishing plants. While not written specifically as a treatise on materials handling in the printing plant, yet a great deal of its text will be of value in the handling of materials in the plant and out-going shipments from the plant. Bound in light buckram, 309 pages, many illustrations, size 6 in. by 9¼ in. Price $5.00.

READING AS A VISUAL TASK—By Matthew Luckiesh, D.Sc. and Frank Moss, E.E. Most important research work to have been published in many years. For printers, designers, publishers, typographers and layout men. Readability of type, type faces, length of line, leading between lines, paper, ink, printing method and lighting are some of the factors involved in ease of reading. Size 5½ in. by 8⅝ in., 428 pages, bound in maroon gold stamped cloth. Price $5.

STANDARD BOOK ON ESTIMATING for PRINTERS—By Fred W. Hoch. Revised 1941 edition. This book is a primer for students and a reference for printers and estimators. Every printing plant should have a copy. Author explains all operations in commercial printing plant and shows production time allowance for each in hours and decimal hours. Size, 6 in. by 9¼ in., 268 pages, $3.75.

PRINTING INKS—Their Chemistry and Technology—**By Carleton Ellis.** Bound in cloth, 6 in. by 9½ in., 560 pages, well illustrated. For printing executives, pressmen, photo-engravers, plate-makers, ink manufacturers, chemists, paper-makers. Author stays close to printing plant. The solving of new production problems brought about by technological improvements, both in equipment and inks, created the urgent need for this book. Price $7.75.

GRAVURE

PHOTOGRAVURE—By H. Mills Cartwright. Covers all of photogravure's basic principles in concise and readable language. Rotogravure receives minor discussion but this is generally considered best textbook on photogravure process. Contains 202 pages, 34 illustrations, maroon cloth, size 6¼ in. by 9¼ in., $3.50 per copy.

STEREOTYPE

MANUAL OF STEREOTYPING—By Joseph Goggin. This 256-page book conveys technical information and manipulating procedure. Written by a practical stereotyper. Price $5.00.

OFFSET-LITH

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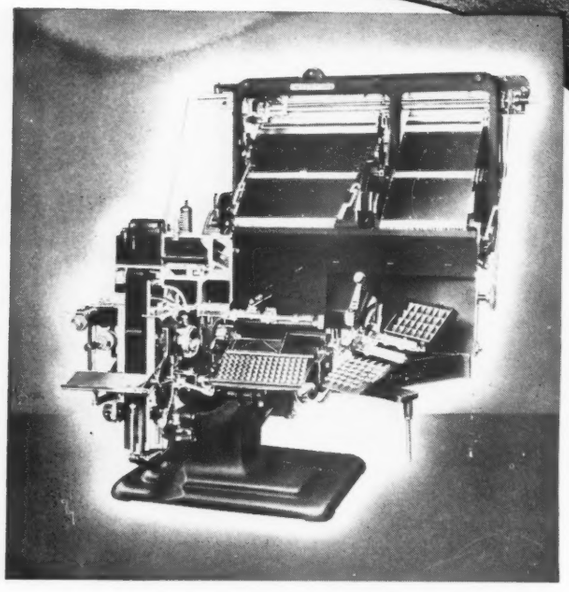

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